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ORIGINAL ARTICLES.

THE CAUSES OF THE VARIATIONS OF THE CARDIO-AORTIC OR "PRESPHYGMIC" INTERVAL.

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CHAPTER III.

One of the outcomes of the simultaneous graphic method has been the demonstration and measurement of an interval of time between the beginning of ventricular contraction or systole and opening of the aortic valves, or beginning of the aortic pulse. The term "presphygmic," applied to this interval by the author, appears well chosen, as expressing the phase of ventricular systole which precedes the rise of the arterial pulse. This term and "cardio-aortic" or "ventriculo-aortic," will be used synonymously in this article.

Observations relating to the presphygmic interval must necessarily be made on man between the point of ventricular beat and the point of pulsation of a near artery, as the carotid, or subclavian; the former being usually selected as more accessible for exploration. To get the presphygmic interval in its purity, it is only required to deduct from the full cardio-carotid interval the brief transmission interval of the pulse wave between the points named; but so short is this interval compared with the whole cardio-carotid time difference that practically it may be neglected, and the time between the ventricular beat and carotid pulse taken as the representative of the presphygmic interval.

Experiments on the schema in aid of elucidation of questions pertaining to the presphygmic interval must be made between a pump representing the heart and near point of a tube representing the aorta. Accordingly, for our purpose, the upper receiver was placed in communication with the interior of the pump of the schema, and the lower receiver with the interior of the egress tube, twelve inches distant. Thus, compression of the pump or ventricle immediately increases the pressure within, which increase sooner or later overcomes the valvular barrier, and is felt in the arterial tube. The two events of ventricular and arterial increase of pressure are instantly signaled as waves, and their time relation to each other is then easily determined. The arterial tube, being practically rigid, would give for the short distance traversed an inappreciable transmission interval, so all the delay signaled by the traces may be placed to the account of the schematic presphygmic interval. The action of the hand on the pump can be made to imitate very closely the movements of the human ventricle.

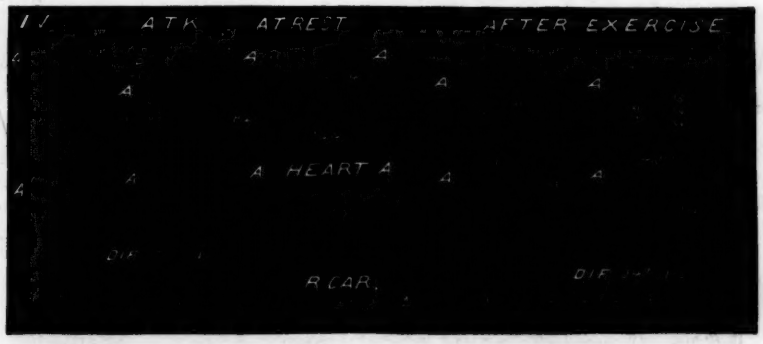

Fig. 43.

In the present study the form of distinct propositions will be continued.

PROPOSITION I.—The duration of the presphygmic interval varies with the pulse rate; being shorter with frequent and longer with rare pulsations.

Experiment on man never fails to prove variation in the sense stated, of the cardio-carotid interval coincident with a considerable variation of pulse rate. We offer two illustrations. Fig. 43 is reproduced from a former publication.[1] The heart and carotid were traced before, and immediately after, active exertion. The pulse rate before was 82, after 130. The cardio-carotid interval was before .075", after .047", all as shown

Fig. 44 was taken from a girl, aged twelve years.

[1] *Boston Med. and Surg. Journal*, Sept. 29, 1881, p. 293.

on the second day of scarlet fever. Temperature 103.2°, pulse-rate 126. The tracings are of the heart and radial, and carotid and radial. The cardio-radial interval measures $\frac{1}{10}''$ and the carotid-radial $\frac{1}{15}''$, which would make the cardio-carotid interval only $\frac{1}{30}''$. We could easily multiply such examples.

Coincidence of cardio-carotid lengthening and pulse infrequency has its limits. We have found that an interval of $\frac{1}{10}''$ usually goes with a pulse of 60, but if the latter fall lower, there is no certainty that the former will farther lengthen.

Fig. 44.

This relationship between the pulse-rate and cardio-carotid interval for variations between 60 and 120, the author expresses by the following working formula: The cardio-carotid interval is normally about one-tenth the duration of the pertaining pulsation.[2] Thus a pulse of 60, 1 second long, would give for the interval $\frac{1}{10}$ second; a pulse of 72, $\frac{5}{6}$ second long, would give $\frac{1}{12}$ second, and so on. Any considerable departure from this ratio, we consider, would be irregular, and dependent upon abnormal conditions. New observations confirm in the main the justness of this formula.

Nevertheless pulse-rate in itself can have no modifying influence upon the presphygmic interval; other things being equal, the rate may be fast or slow and the interval remain the same. With the schema, the ventricle worked at a uniform quickness and force, and the outflow and pressure maintained at a given rate and value, the interval between the rises of pressure in the ventricle and artery will be the same, whatever the order of succession of the impulses.

But in the organism, when the pulse-rate changes other conditions change likewise, and in these concomitants we shall find the real producers of the presphygmic variations found associated with modifications of pulse-rate.

PROPOSITION II.—The duration of the presphygmic interval varies with the mode of ventricular systole; being longer with slow and shorter with quick contractions.

It would appear that effect must follow cause as implied in the proposition; for a quick action of the ventricle must raise the ventricular pressure, so as to overcome the arterial pressure and send forth the wave sooner than a slow action. But the demonstration is easily made on the schema.

In Fig. 45 the ventricle was first made to contract slowly, and then quickly, with a ventricular pressure of 4 inches, and arterial gradually rising from 50 inches. It is seen that the interval between the ventricular and arterial waves is very much longer under the slow impulsion than that under the quick; the former measuring $\frac{1}{5.6}''$, and the latter $\frac{1}{17}''$.

Fig. 45.

It is plain that the greater the difference between the pressure in the ventricle and artery, the greater will be the modifying effect of different modes of ventricular action; and if the pressures are in equilibrium, a slow action will start the arterial wave as soon as a quick action.

When we seek in man examples of the effect of different modes of ventricular action, we find them in modifications of pulse frequency. The frequent

[2] *Boston Med. and Surg. Journal*, April 29, 1880, p. 409. Also, *Cincinnati Lancet and Clinic*, March 29, 1879, p. 224.

pulse is sent forth by a comparatively quick systole, and the rare pulse by a comparatively slow systole. Figures 43 and 44, lately produced, well illustrate this proposition. It cannot be doubted that a quick ventricular systole characterized the acceleration of movement shown.

Fig. 46.

It may be true that the arterial pulse is sometimes quick and rare, or slow and frequent; but ventricular systole is probably always slow when rare, or quick when frequent. We can understand such coincidence of slow systole and quick pulse, or quick systole and slow pulse, inasmuch as the quality of the arterial pulse depends upon the arterial as well as the cardiac conditions.

PROPOSITION III.—The duration of the presphygmic interval varies with the excess of arterial over ventricular blood-pressure, and is longer with a high, and shorter with a low value of such difference.

Assent to this proposition is readily gained through *a priori* processes. At the beginning of systole, the higher the arterial pressure relatively to the ventricular, the longer must be the time required to raise the latter above the former. One condition alone could defeat such an order, viz.: a quicker initial ventricular contraction coincident with the higher arterial pressure; but the proofs are convincing that the reverse obtains.

In demonstration, we offer an example from experiments on the schema.

Fig. 46 shows traces of the ventricular and arterial waves at different degrees of arterial pressure, the ventricular remaining throughout at a uniform pressure of 4 inches. The first waves, with pressures in equilibrium, show no appreciable arterial delay; the second waves, with arterial pressure at 40 inches, show a delay of .08 second; the third waves, with arterial pressure at 50 inches, show a delay of .09 second; and the fourth waves, with arterial pressure at 60 inches, show a delay of .105 second.

Fig. 47.

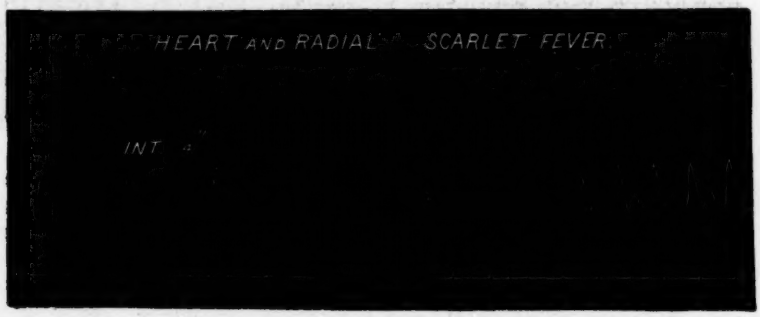

Fig 48.

In man the experiment of tracing the heart and carotid before and during compression of the femorals, succeeds in showing elongation of the presphygmic interval as a result of increased aortic pressure. Fig. 47 is an example taken from the nine year old

boy that furnished Fig. 27. The cardio-carotid interval is $^1/_{12}$ second before and $^1/_{10}$ second during the compression. This experiment commends itself for its purity in that there are no complicating conditions.

Again, in fever the arterial pressure is notably low, and always in this condition, if the heart valves are intact, the cardio-carotid interval is shown to be diminished. In illustration, besides Fig. 44, before given, Fig. 48 may also be studied. It was taken from a boy five years old in the height of scarlet fever, of which he died two days afterwards. The traces are of the heart and radial, but from these it is easy to approximate the interval between the heart and carotid.

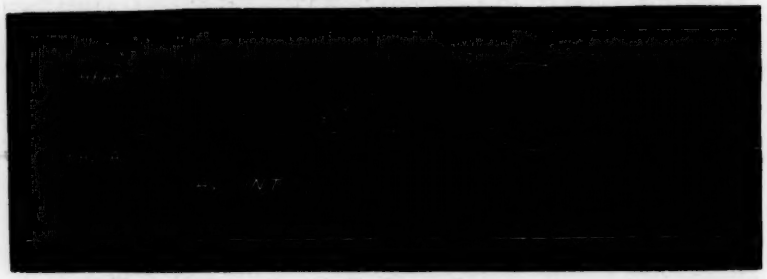

FIG. 49.

The cardio-*radial* interval averages about $^1/_{14}$ second, which, even with a rapid transmission time would make the cardio-carotid interval extremely short; in no event could it exceed $^1/_{30}$ second. To make the showing stronger we introduce figure 49, taken from a healthy little boy of the same age, on the same day, with the instrument unchanged. It will be observed that the cardio-*radial* interval here averages about $^1/_7$ second, twice as long as in the former instance.

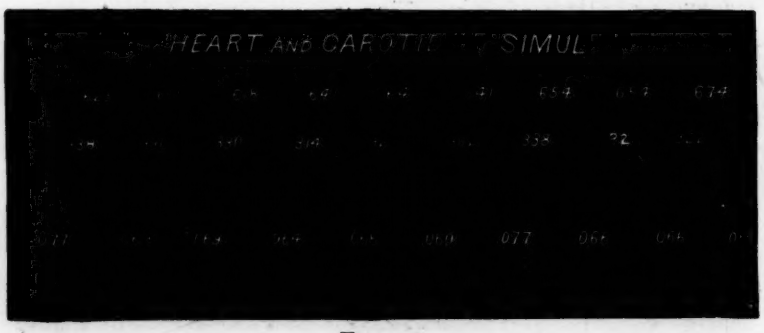

FIG. 50.

However, examples from fever cases are complicated with the effect of quickened systolic contraction; and indeed, it is difficult from any source to obtain the effect of lowered arterial pressure dissociated from that of systolic quickening. Nevertheless, it must be true that quickness of ventricular contraction could not produce such shortening of the presphygmic interval without concurrence of the effect of low arterial pressure.

We are now prepared to understand why the duration of the presphygmic interval is proportional inversely to the pulse rate. It is because the pulse-rate stands in a sense as the exponent of the mode of systole and relative arterial pressure. When the pulse is frequent, systole is quick and the pressure is low, and the interval is short. On the other hand, when the pulse is rare, systole is slow and the pressure is high, and the interval is long.

It is worthy of remark that the ventricular and arterial blood-pressures, while readily changing their relative value, tend promptly to return to the normal difference, and in the processes of these fluctuations the operations of the modifying factors may again be farther modified. Thus, if the capillaries become constricted, the increased arterial pressure will add itself to the slow ventricular contraction, and the two will produce a marked lengthening of the presphygmic interval, but soon the ventricular pressure rises and the arterial declines, the balance is restored, and the mode of systole and the presphygmic interval again become normal.

Or, again, if the capillaries become suddenly relaxed, the arterial pressure falls, the heart starts off with quickened and accelerated action, and the two factors here unite to produce a marked shortening of the presphygmic interval, but under the increased frequency of the systoles the pressure soon rises again, and whilst rising, the pulse acceleration not yet checked, the factors antagonize each other, and the presphygmic interval may not be diminished, though the pulse is frequent. Soon, however, all is regular again. These variations of conditions and effects can be well illustrated on the schema.

PROPOSITION IV.—The duration of the presphygmic interval is subject to limited variation, even when the cardiac action and blood-pressure appear most regular and equal.

In illustration of this proposition, we will study Fig. 50, selected for the distinct markings and appa-

rent regularity of the pulsations. We took the pains to measure on the slide the cardio-carotid interval of each pulsation, marking the result below each basal point of the carotid traces; also the duration of each cardiac systole and cycle, marking them respectively as shown in the cut. These measurements were made under a glass, with extreme care, and it is believed they contain no material error.

The lower row of decimals shows the variations of the cardio-carotid interval. The longest interval is .077" and the shortest .060".

The upper row of decimals shows the duration of the cardiac cycles. Examining the relation between these and the corresponding cardio-carotid intervals, the variations are found discrepant; a long interval going, as likely, with a short cycle, and a short interval with a long cycle. So in the small variations of cardiac rhythm, the rule does not hold of a ratio between the presphygmic interval and the pulse-rate.

The middle row of decimals shows the duration of the cardiac systoles. Examining the relation between these and the cardio-carotid intervals, the variations are found in the same direction; a long interval going with a long systole, and a short interval with a short systole. The correspondence here shown we have found to hold as a rule in the small variations of systolic duration of so-called regular pulsations. But the rule has exceptions, for the length of systole is determined by its ending as well as by its mode of beginning.

Therefore we feel justified in formulating these observations under the following statement:

PROPOSITION V.—In the small variations of apparently regular pulsations, the presphygmic interval does not observe any rule of variation with respect to the duration of the cardiac cycles, but as a rule varies in the same sense as the duration of the cardiac systoles.

In explanation of the proposition, we remark there are no facts anywhere to indicate that diastole is anything but a cipher in the processes; all depends upon systole. The explanation is found in the fact before developed and applied—viz.: that when the systoles are longer their beginning is slower, which determines a longer interval; and when the systoles are shorter their beginning is quicker, which determines a shorter interval.

Fig 51.

Passing now to the consideration of cardiac valvular and orificial troubles, we commence with—

PROPOSITION VI.—The presphygmic interval is abnormally shortened in free aortic insufficiency.

François-Franck first demonstrated on man that the delay of the arterial pulse on the heart is diminished in aortic insufficiency. The author had independently foreseen the fact, and given its true rationale,* and soon was able to verify its reality by actual observation. The fact needs no further substantiation, and such precipitation of the arterial pulse, notably of the carotid, of course, implies abbreviation or extinction of the presphygmic interval. However, the phenomenon in question is so happily illustrated on the schema that we will not forbear the presentation of two examples of results so obtained.

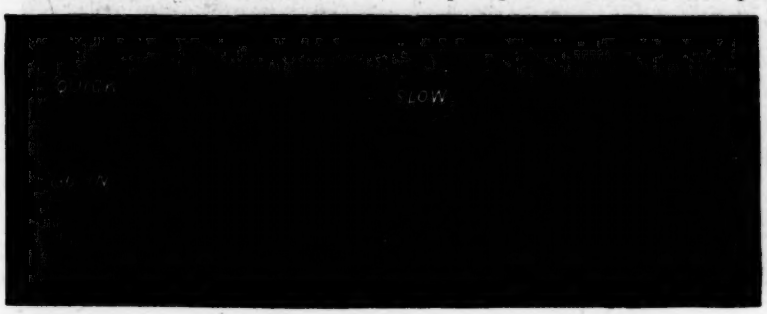

FIG. 52.

Fig. 51 shows traces of waves from the ventricle and aortic tube taken with the egress or aortic valve removed, representing free aortic insufficiency. The waves were traced at successively increasing pressures, viz.: 30, 40, 50 and 60 inches.

It is shown that the ventriculo-aortic time-difference is inappreciable throughout, the lowest and the high-

Cincinnati Lancet and Clinic, March 29, 1879, p. 224.

est pressure giving precisely the same result. It is also shown that the ventricular pressure rises *pari passu* with the arterial.

Fig. 52 represents aortic insufficiency under quick and slow action of the ventricle. It will be noticed that the waves are as nearly synchronous under the one as under the other.

These showings are all distinctly different from what has been shown to take place when the valves are intact; and in the light of their testimony we are all the more ready to accept the following explanation of the interesting and valuable diagnostic fact, the individuals. In illustration of this important fact we will here add one other example:

Fig. 53 was taken from the patient referred to in Chapter II, and from whom was taken Fig. 32, showing the carotid-radial traces. It will be remembered he was suffering from typhoid fever complicated with mitral regurgitation. The traces of the first of the figure were taken on the 19th day of the fever, with temperature 103.2°, and pulse-rate 114. The cardio-carotid interval measures between $\frac{1}{9}$ and $\frac{1}{10}$ second; when, under the conditions, without mitral insufficiency, it could not have measured half as much.

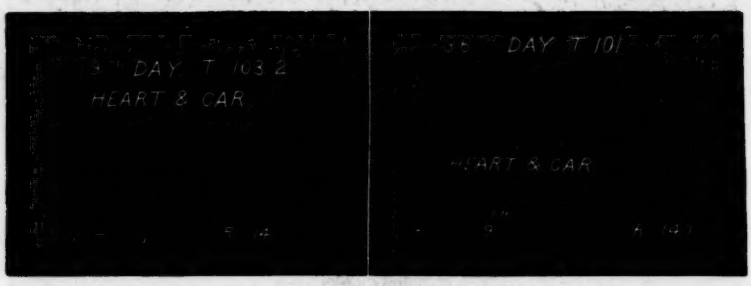

Fig. 53.

that the arterial pulse appears distinctly earlier than normal in free aortic insufficiency:

When the aortic valves are permanently open, the blood-pressure at the end of diastole is equal in the ventricle and aorta, they constituting parts of one cavity, and therefore, immediately upon the contraction of the ventricle, the blood-pressure in the aorta begins to rise. Whereas when the aortic valves are intact, the blood-pressure at the end of diastole is much lower in the ventricle than in the aorta, and therefore time is required after the beginning of ventricular systole to raise the ventricular pressure above the aortic, which must take place before the arterial pulse can be initiated. In the one case the presphygmic interval is intangible, in the other it can easily be measured.

The last part of the figure was given on the 36th day; temperature 101°, pulse 140. The cardio-carotid interval here measures between $\frac{1}{8}$ and $\frac{1}{9}$ second, when, irrespective of the valvular lesion, it could not, in any event, have exceeded $\frac{1}{24}$ second. Contrast these intervals with those of the fewer cases Figs. 44 and 48, in which there was no cardiac valvular trouble, and in which the cardio-carotid intervals were not over $\frac{1}{30}$ second.

The schema also is lucid here. If the ingress or mitral valve be removed and a second pouch added to the ventricle, in imitation of the auricle, and then these worked in imitation of the action of the heart, and traces taken, we get a prolonged ventriculo-aortic time-difference. Fig. 54 gives results obtained under the conditions named.

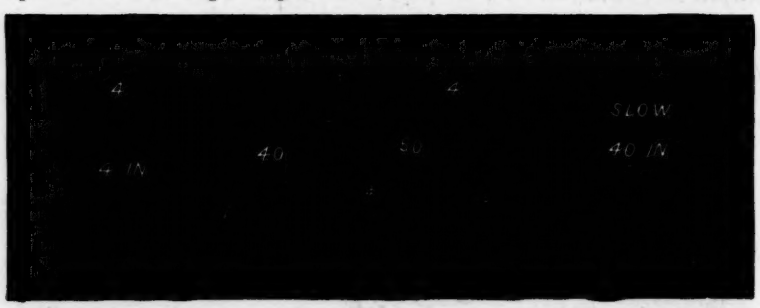

Fig. 54.

These intervals are very long, compared with those of Fig. 46, in which the valves were intact.

From the form of the ventricular traces it might be supposed that the action was slow, and the longer intervals resulted therefrom; but in fact the contractions were quick, and the sloping ascents were in consequence of the free backward escape of the liquid. The traces in the latter part of the figure show the increased lengthening effect of slow ventricular contraction.

In contrast with the preceding is:

PROPOSITION VII.—The presphygmic interval is abnormally lengthened in mitral insufficiency.

We were the first to demonstrate abnormal delay of the arterial pulse in mitral insufficiency. Our published cases[1] show the cardio-carotid interval to be at least double what would otherwise be normal to

[1] *Lancet and Clinic* (Cincinnati), March 22, 1879.

Then, with the proofs in its favor, we risk nothing in accepting abnormal delay of the arterial pulse, in other words, elongation of the presphygmic interval, as a certain effect of free mitral insufficiency. And the mechanism of the phenomenon we would explain thus: When ventricular systole begins, there being no mitral barrier, the blood first flows into the relaxed auricle, and is not turned into the aorta until a sufficient head of pressure shall have gathered to force the aortic valves. Time is thus lost between the beginning of ventricular contraction and that of aortic expansion, and the presphygmic interval is accordingly lengthened.

Fig. 55.

PROPOSITION VIII.—The presphygmic interval is lengthened in that variety of aortic obstruction in which the elevation or opening of the valves proves to be difficult independent of the blood-pressure.

Examples have been elsewhere contributed of great delay of the carotid pulse arising from this cause, as proved *post mortem*. The mechanism and result can be aptly shown on the schema.

Fig. 55 was procured with the egress valve pressed upon by a spring-weight, which permitted it to yield only to a superior pressure. It will be observed that the ventriculo-aortic intervals are very long, and even with the liquid pressures in equilibrium at 4 inches. In the figure, the effect of stenosis is added to that of the heavy valve, as shown in the sloping ascent and rounded and distant summit of the arterial trace. But it is possible to obtain on the schema what sometimes happens in the living, viz: retardation of the beginning without retardation of the summit, by having the valve close with a species of locking, so that its opening is delayed, but when once forced it rises up freely. Thus heavy aortic valves without stenosis cause delay of the beginning without delay of the summit of the arterial trace; while heavy valves with stenosis cause delay both of the beginning and

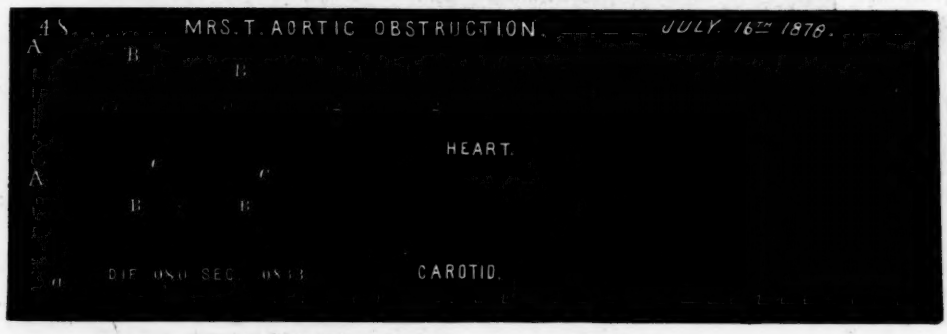

Fig 56. Effect of Aortic Stenosis.

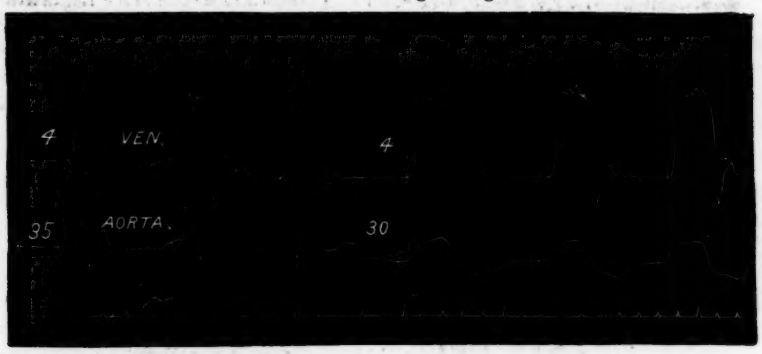

Fig. 57. Effect of Aortic Stenosis shown on the Schema.

summit. Manifestly the presphygmic interval is only concerned in delay of the beginning of the arterial wave.

PROPOSITION IX.—Aortic obstruction from pure aortic stenosis does not cause elongation of the presphygmic interval, but only delay of the arterial summit.

It is plain that, with pliable aortic valves, the blood would begin to flow as soon through a small as through a large orifice.

The form of the pulse in aortic stenosis is familiar to all, but Fig. 56, here republished, shows not only the peculiar form, but that the beginning of the pulse was not delayed.

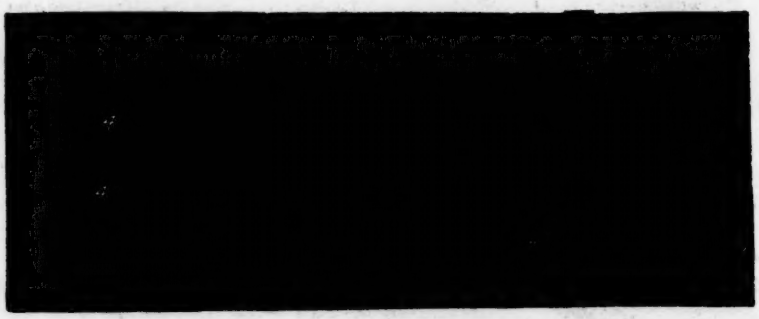

Fig. 58.—Effect of mitral contraction shown on the schema.

Schema: In Fig. 57 the traces of the first part were taken at thirty-five inches pressure, with the valve intact and tube free; and the traces of the last part at thirty inches pressure, with valve intact and tube constricted by compression just in front of the valve. It is seen that while the form of the arterial trace after the compression is strictly that of aortic stenosis, the beginning of the waves are not in the least later than before the compression.

Therefore the presphygmic interval is not lengthened in aortic stenosis if the aortic valves are pliable.

PROPOSITION X.—The effect of mitral constriction on the duration of the presphygmic interval remains as a problem to be solved.

No examples have been furnished from any observer of measurement of the cardio-arterial interval in cases of mitral stenosis. Experimental data in relation to this point are derived alone from the schema, and these, though positive, we hesitate to accept until confirmed by observations on man. However, the fact is patent that in no instance has the schema failed, when applied, of reproducing the same effects as observed in man.

Fig. 58 shows the result obtained, the first part under normal conditions, the last part with ingress tube constricted immediately behind the valve. The ventricular trace indicates that under the constriction the pressure within must have fallen in diastole to a point relatively low. But the striking showing is the great decay of the arterial trace, showing about ¼ second, whereas the normal shows about $\frac{1}{10}$ second.

This result was a surprise to us, and yet, on maturer reflection, it does not appear inconsistent with the mechanisms involved in mitral contraction. At the end of diastole, the ventricle being quite relaxed and unfilled, and systole starting under these conditions, it would progress longer than usual before the parietes would press sufficiently upon the contents to force them through the aortic valves. With the mitral orifice and valve normal, systole begins upon a distended ventricle, the pressure rises rapidly from the start, and the overflow into the aorta promptly begins.

Therefore we conceive that the problem *will* be demonstrated in favor of the ability of mitral constriction to produce exaggerated delay of the pulse, which implies elongation of the presphygmic interval.

The following are prominent among the facts determined by this last research:

1. The duration of the presphygmic interval is *increased* in slow ventricular contraction; infrequent pulsations; relatively high arterial pressure; heavy aortic valves; mitral insufficiency; and probably mitral contraction.

2. The duration of the presphygmic interval is *diminished* in quick ventricular contraction; frequent pulsations; relatively low arterial pressure; and aortic insufficiency.

THE INCREASE OF INSANITY IN THE UNITED STATES—ITS CAUSES AND SOURCES.

BY FOSTER PRATT, M.D., KALAMAZOO, MICH.

(Read to the American Public Health Association, Nov. 15, 1883.)

The increase of population necessarily increases the aggregate of insane. The important question, and the one mainly to be discussed, is this: Does insanity increase faster, *in proportion*, than does the population?

The facts, on which the following discussion is based, are taken mainly from the census of 1880, in connection with that of 1850, 1860 and 1870. The reports of the number of insane in the preceding decades are known to be defective in their aggregates, but whatever error there is in the total, the error is fairly and proportionately distributed between the several classes of population, and to this extent they may be used as standards of comparison.

The census of 1880, manifestly the fullest and most accurate ever made by our Government, is itself defective; while it makes manifest the increased ratio of insane to population, it does not (because of certain omissions) enable us to state what the precise ratio is.

The political issues of slavery, for thirty years, have concentrated the attention, even of scientists, to the

one race relation of whites and blacks; but other race relations and their effects will now receive their due share of attention. The entire population of the United States is considered in three classes—native white, foreign white and colored.

Beginning with 1850 (and using round numbers) we find, that during the thirty years intervening between 1820 and 1850, 2,250,000 emigrants came to the United States; and that, out of a total population, in the latter year, 23,191,000, 2,240,000 of foreign born yet remained alive and in the country. The total number returned insane, by the census of this year, was 15,610, of which 2,049 were of foreign birth. It thus appears that the foreign born—about one-tenth of the population—furnished in 1850 one-seventh of the insane.

During the following decade, 2,814,000 emigrants cast their lot with us; and in 1860, in a total population of 31,443,000, 4,136,000 were foreign born. The total number of insane, then in the United States, was reported to be 23,999, and of this 5,768 were foreign born—nearly one-eighth of the population—furnishing one-fourth of the reported insane.

Between 1860 and 1870, 1,878,000 emigrants arrived; and in 1870, out of a total population of 38,538,000, the foreign born numbered 5,567,000. The aggregate of insane for that year was 37,432, of which 11,221 were charged to the foreign born element; the foreign born—one-seventh of the population—furnishing nearly one-third of the insane. This decade included the four years of war.

During the last census decade, from 1870 to 1880, our foreign accessions were 2,742,000; and in a total population of 50,155,000 in 1880, the foreign born were 6,679,000. The aggregate number of insane in 1880 (greatly increased, as we have seen, by greater care and accuracy in the census work) was 91,997; and of this number 26,346 were foreign born; a little less than one-seventh of the population furnishing more than one-fourth and nearly one-third of the insane—13⅓ per cent. of the population producing 28 75-100 per cent. of the insane.

Admitting that census tables, prior to 1880, fail to give the full *aggregates* of the insane, it will be safe, for present purposes, to assume, that, whatever errors there may have been in the totals, the error of each census, was fairly distributed between the various elements of population; so that the census *proportion* of insane, to each class of population, was fair and just. If this be conceded—and a close study of the census tables and other sources of information, shows that it should be—we are enabled to reach several interesting and significant results.

1. Beginning with 1860—while the foreign born population had increased, since 1850, nearly 100 per cent., the foreign born insane had increased 181 per cent.

2. That at the close of the next decade in 1870, the total foreign born had increased only about thirty per cent., but the insane of this class had increased nearly 100 per cent.

3. In 1880, the foreign born had increased less than twenty per cent., but their insane had increased 150 per cent.

A statement of the proportion of insane to each class of population—native and foreign—at each census, shows, very clearly, the relative rate of increase.

In 1850, of native population, there was 1 insane in 1,5,45; and of the foreign born, 1 in 1,095.

In 1860, of native born, the proportion was 1 in 1,559; and of foreign born, 1 in 717.

In 1870, natives furnished 1 in 1,258; and foreign, 1 in 497.

In 1880, native population shows 1 insane to 662; and foreign born, 1 in 250.

(It should be borne in mind that, in the foregoing statements, the inaccuracy of the census aggregates, in all vital statistics, prior to 1880, is conceded, but their relative fairness, in the distribution of insane, is assumed.)

Thus it becomes manifest, that while the proportion of native insane to native population remained nearly the same, in 1850, 1860, and 1870, the proportion of foreign insane, in the foreign element, rapidly increased from 1 in 1,095 in 1850 to 1 in 497 in 1870; and when we reach the approximately accurate aggregates of 1880, we find the native insane amount to 1 in 662 of native population, while the foreign born insane are 1 in 250 of foreign born population—and that nearly one-eighth of the aggregate population furnishes nearly one-third of the aggregate insane.

But in fairness to the foreign white element, the two prominent factors of our native population—white and colored—should be separately considered. If this be done, on the basis of the last census, we find, that the native colored races (Negroes and Indians), furnish 1 insane in 1,096 7-10; the native white, 1 in 618 12-100; and the foreign born white, 1 in 250; the first being about 1 in 1,000, the second 1 6-10 in 1,000, and the last 4 in 1,000. These differences are very marked. The black race, notably afflicted (especially in the Southern States), with idiocy, is freest of all from insanity. The foreign element bring with them few idiots, but they generate an astonishingly large proportion of insane. Our native white population show more of both, than (until lately) was believed by some to exist; but the causes of the increase will be subsequently discussed.

Your attention is now invited to the following table:

This table has been constructed of figures furnished by the "census compendium" of 1880, recently distributed.

The figures of its first three columns are derived from table 1 of the compend, thus:

"Native *White* Population" is obtained by subtracting "Colored" and "Indian" from "Native," of the census table; "Foreign *White*," by subtracting "Chinese" and "Japanese" from "Foreign," of the census table; and "Colored Races," by adding "Colored," "Indians," "Chinese," and "Japanese" of census table.

This method of obtaining "Native White" was found to be better for the present purpose than to copy the "Native White" figures census table No. 28, because of certain unexplained discrepancies between census tables Nos. 1 and 28. Census table No.

1 is consistent with itself, and balances properly in all its parts; and by following it in the construction of these "Population" columns the table becomes harmonious with itself and with the census table also.

The blacks, by their great preponderance, are the essential element of the "Colored Races" in the table; for, while the blacks alone number 6,580,793, Chinese, Japanese and Indians together number only 172,220. By the consolidation of these elements the table is simplified, and no injustice is done to any class in the study of their relations to insanity and idiocy.

The three columns of "insane" are constructed from census table 138; subtracting the "colored" and "Indian" elements from the "native" insane, gives "native *white*" insane; subtracting the "Chinese" and "Japanese" elements from "foreign" insane, gives "foreign *white*" insane; and "colored" insane of the census table (including, as it does, the insane of all the colored races, whether native or foreign), has been transferred, without change, to this table. As before remarked, this simplifies the table, facilitates comparison, and does no injustice.

The three columns of "idiotic" have been similarly constructed from census table 139, and are given to complete the tabular statement of the mental conditions of our population as shown by the census.

The reason for constructing this table, so as to show the relations of "Northern States," "Southern States" and "Territories" to insanity and idiocy, will be obvious upon study, and need not be stated.

This rearrangement of census figures presents (which the census tables do not) the three predominant classes of our population by geographical sections, in a shape for convenient examination and comparison.

TABLE.

Constructed from tables I., CXXXVIII and CXXXIX of the Census Compendium of 1880, to show, by geographical sections, the actual and relative contributions, made by "Native Whites," "Foreign Whites," and "Colored Races" (native and foreign) to the "Insane" and "Idiotic" classes found, by said census, in each State and Territory of the United States. (See tables.)

From this table we find by calculation:

1. That the proportion of insane to native white population, in the Northern States, is 1 in 597; in the Southern States, 1 in 660; and in the District of Columbia and Territories, 1 in 748.

2. That among the foreign white, the proportion, in the Northern States, is 1 in 248; in the Southern States, 1 in 283; and the District and Territories, 1 in 236.

3. That among the colored race, the proportion, in the Northern States, is 1 in 545; in the District and Territories, 1 in 680; and in the Southern States, 1 in 1,235.

4. That the average proportion of insanity among native whites, in the entire United States, is 1 in 618; among foreign whites, 1 in 250; and among the colored races, 1 in 1,097; and that the total average, for the entire country, of all population, is 1 in 545 $^{19}/_{100}$.

5. The high rate and the slight variations of the proportions of foreign insane to foreign population, in all sections, should be noted.

6. The large proportion of insanity among the colored races, in the Northern States and Territories, as compared with that in the Southern States, is also noteworthy.

7. The different proportions of native white insane to native white population, North and South, and the causes of it, demand careful study and will be briefly discussed in this paper.

8. It is a significant fact that the Northern States, including the District and Territories, containing about sixty per cent. of the entire population, have about seventy per cent. of its insane; and that this ten per cent. of proportional excess is more than supplied by the excess of foreign insane over the number that would result if the ratio of native insane to

SECTION 1—NORTHERN STATES.

Northern States.	Population.			Insane.			Idiotic.		
	Native white.	Foreign white.	Colored races.	Native white.	Foreign white.	Colored races.	Native white.	Foreign white.	Colored races.
California	549,525	217,656	97,513	835	1,533	135	437	56	14
Colorado	151,948	39,178	3,201	58	33	8	71	4	2
Connecticut	480,906	129,863	11,931	1,182	509	32	752	50	15
Illinois	2,447,787	583,364	46,720	2,043	2,115	76	3,717	406	47
Indiana	1,794,649	144,149	39,593	2,844	618	68	4,468	175	82
Iowa	1,353,083	261,617	10,015	1,707	838	9	2,082	218	14
Kansas	842,088	110,067	43,941	720	168	39	924	100	59
Maine	587,977	58,875	2,084	1,367	168	7	1,271	52	2
Massachusetts	1,320,528	388,480	22,377	3,301	1,784	43	1,847	170	14
Michigan	1,226,080	267,651	16,303	1,807	951	38	1,836	318	27
Minnesota	599,233	97,396	3,880	383	757	5	526	191	12
Nebraska	359,308	46,280	8,710	246	200	1	286	66	4
Nevada	33,322	20,234	2,638	14	16		14	2	2
New Hampshire	299,949	46,280	761	927	129	1	673	25	5
New Jersey	870,489	221,528	39,699	1,363	960	82	932	79	45
New York	3,805,569	1,210,453	66,849	7,595	6,321	195	5,494	529	61
Ohio	2,723,089	394,831	80,142	5,451	1,073	162	6,000	307	153
Oregon	142,084	20,991	11,693	247	114	17	168	9	4
Pennsylvania	3,609,343	587,673	85,875	5,933	2,140	171	6,089	304	104
Rhode Island	195,973	73,066	6,592	441	229	14	199	24	11
Vermont	290,359	40,959	1,068	829	181	5	744	56	3
Wisconsin	904,209	405,409	5,879	1,041	1,476	9	1,365	411	9
Totals	24,490,358	5,763,874	609,784	40,994	23,276	1,119	39,895	3,552	689

SECTION II.—SOUTHERN STATES.

Southern States.	Population.			Insane.			Idiotic.		
	Native white.	Foreign white.	Colored races.	Native white.	Foreign white.	Colored races.	Native white.	Foreign white.	Colored races.
Alabama	652,455	9,730	600,320	1,064	46	411	1,348	6	869
Arkansas	581,314	10,217	210,994	616	13	160	1,044	6	324
Delaware	110,693	9,467	26,448	121	29	48	210	6	53
Florida	132,714	9,801	126,888	153	15	85	208	5	156
Georgia	806,359	10,547	725,274	1,251	35	411	1,492	7	934
Kentucky	1,317,672	59,507	271,511	2,137	392	345	3,008	18	487
Louisiana	401,297	53,657	484,992	530	168	304	569	18	466
Maryland	641,892	82,861	210,250	1,353	245	259	927	32	360
Mississippi	470,240	9,158	652,199	675	40	432	799	2	778
Missouri	1,811,339	211,487	145,554	2,298	807	145	3,005	125	242
North Carolina	863,501	3,741	532,508	1,586	5	437	2,134	....	1,008
South Carolina	383,428	7,677	604,472	616	35	461	799	7	782
Tennessee	1,122,154	16,677	403,528	1,972	68	364	2,802	15	716
Texas	1,082,757	114,480	394,512	1,052	206	306	1,540	96	640
Virginia	866,168	18,690	631,707	1,619	100	692	1,832	12	995
West Virginia	574,535	18,260	35,862	849	86	37	1,314	....	41
Total	11,818,818	641,987	6,047,019	17,892	2,370	4,897	23,931	362	8,811

SECTION III.—THE DISTRICT OF COLUMBIA AND TERRITORIES.

DISTRICT OF COLUMBIA AND TERRITORIES.	POPULATION.			INSANE.			IDIOTIC.		
	Native white.	Foreign white.	Colored races.	Native white.	Foreign white.	Colored races.	Native white.	Foreign white.	Colored races.
Arizona	20,743	14,417	5,280	9	10	2	4	4	3
Dakota	81,590	51,557	2,030	3	3	....	4	4	....
District of Columbia	100,901	17,105	59,618	368	446	124	40	24	53
Idaho	22,418	6,595	3,597	8	8	....	18	10	....
Montana	25,629	9,756	3,774	26	34	2	12	1	2
New Mexico	100,727	7,994	10,844	132	12	4	108	5	9
Utah	98,930	43,493	1,540	56	64	2	105	43	3
Washington	54,583	12,616	7,917	64	67	4	43	1	....
Wyoming	14,501	4,936	1,352	2	2	....	2	....	....
Totals	520,022	158,469	95,952	695	713	141	385	93	77
Recapitulation by Sections.	**POPULATION.**			**INSANE.**			**IDIOTIC.**		
Northern States	24,490,358	5,763,874	609,784	40,994	23,276	1,119	39,895	3,552	689
Southern States	11,838,318	644,987	6,047,019	17,892	2,270	4,897	23,931	362	8,811
Territories and District of Columbia	520,022	168,489	95,952	695	713	141	385	93	77
Totals	36,828,698	6,574,330	6,752,755	59,581	26,259	6,157	63,311	4,007	9,577
Recapitulation by Classes.	**POPULATION.**			**INSANE.**			**IDIOTIC.**		
Native white	36,828,698			59,581			63,311		
Foreign white	6,574,330			26,259			4,007		
Colored races	6,752,755			6,157			9,577		

*Totals in United States..... 50,155,783. Population. 91,997. Insane. 76,895. Idiotic.

native population, in the North, were made the ratio of foreign population. To illustrate: The average ratio of insane to all native population (white and colored) in the Northern States, is 1 to 642. If this proportion be applied to the 5,763,874 foreign born living in the North, the number of insane resulting among them would be 9,240 instead of 23,989, as it now is—a difference of 14,749, which is much more than ten per cent. of proportional excess of insane to population in the Northern States and Territories.

9. The comparison of the productive ratio of insane in the foreign population (which is the most productive) with that of the colored population in the Southern States (which is the least productive) is very striking. The foreign element in the Northern States and the colored element in the Southern States are nearly equal in numbers; but the former exceeds the latter in the production of insanity by the proportion of nearly five to one!

10. The total insanity found by the census, 1880, is 91,997.

If the colored average for the United States were applied to the entire population, the total number insane would be 45,721—about half what it is; if the native white average were similarly used, the number insane would be 81,158—more than 10,000 less than it is; but if the foreign white average in the United States were the rule for the entire population, the number of insane would be 200,623—or, 118 per cent. more than it is. The application of these various ratios to the entire population, demonstrates the vast significance of seemingly slight differences in the ratios.

A careful study of the table will develop other interesting and important illustrations of the relations of this question to races and sections.

It is thus made apparent that the aggregation of insane has increased with the increasing aggregate of population; and that the proportion of insane to population has steadily increased by accumulation or otherwise since 1850. But there is another and very important question to be considered; are *new* cases of insanity increasing in a ratio greater than that of the population? Are morbid influences insidiously operating on our growing population, which so deprave our vital condition and forces as to produce insanity, year by year, at a rate per cent. greater than the rate per cent. of our growth? It seems clear, from the preceding study of the census, and the inevitable deductions from its statistics, that this important question must be answered in the affirmative. But the census tables, as before stated, furnish no data that fixes the rate of increase. It tells us how many were *found* insane in 1880, but it does not tell us how many *became* insane that year, and if it did, no previous census furnishes a like statement

*It is scarcely necessary to call attention to the fact that these final "totals" agree with the footings of Tables Nos. 1, 138 and 139, of "Compendium of the Tenth Census."

for any previous year, as a basis of comparison. We are compelled, therefore, to ascertain, by other means, whether we are or are not developing an increasing ratio of insane to population. This will be attempted, though the increased ratio, if found to be a fact, cannot be definitely stated. But if we can find satisfactory proof that our annual insane product is unduly increased, we cannot afford to defer action upon it until we are able to make a mathematical statement of the ratio.

Insanity is increasing, manifestly, from three causes: First, the intense life of our native population. This has been so much discussed of late that little need be said of it now. The writer quotes on this point the following from one of his own recent papers: "We see more, hear more, read more, think more, feel more, know more, do more and worry more in ten years than our grandfathers did in thirty. Where does the strain of this intensity fall? Not on our physical strength; for, with all we do, we do not labor as hard, physically, as did our fathers before us. This strain of intensified life falls, of necessity must fall, on the brain and the nervous system." The rapid increase of paresis and other forms of brain and spinal degeneration among our ablest, busiest and best men furnishes fearful proof of the effects of overtaxing the nervous forces. Second, our insane aggregate is increased by immigration. It has been shown by the census of 1850 that the proportion of insane in the foreign-born population at that time was nearly the same as in the native population. Since that year each succeeding census has revealed a rapidly increasing proportion of insane in the foreign class. Soon after 1850 we find the Legislatures of Massachusetts, New York and Maryland passing acts to protect their people from the rapidly increasing burden of foreign paupers, criminals and insane arriving at their respective ports. This simultaneous legislative movement in three States, similarly situated with reference to foreign arrivals, indicates that a new and serious evil demanded a remedy. It also fixes the date of its beginning. To what was the evil due? European municipalities, burdened by defective and criminal classes, seeing, in our hospitality to immigrants, a chance of relieving thousands from a heavy tax, began, in a quiet, unobserved way, to encourage, and aid, and at times almost compel their defective population to come to us. That they did come, and that they have continued to come, each succeeding census, not to speak of other evidences of the fact, furnishes incontrovertible proof. The foreign-born had, of insane, in 1850, one in 1,095; in 1860, one in 717; in 1870, one in 497, and in 1880, one in 250. Such a ratio of insane, much greater than that of the population producing it, could not have resulted from the operation of ordinary or natural agencies.

The tables, compiled and published by the Bureau of Statistics at Washington, show that during the thirty years, between 1850 and 1880, the immigration proper to the United States amounted to the immense aggregate of 8,033,235. The great majority of this element was a valuable acquisition. They brought an aggregate of money, estimated by competent judges, to be equal to one-half our Federal debt; and their capacity as laborers and producers was an addition to the capital of the country more than equal to the whole debt. Nor is this all; they added largely to the literary, scientific, mechanical, and other skilled activities and industries of our people. But with these come others, and they still come, who are a plague spot on our vital and social conditions, and a blot on our vital statistics.

The "assisted emigrant" began to be numerous twenty-eight years ago, but he was never officially designated till last year. He became especially numerous in 1863 and 1864, when the bounties of "loyal States" filled their quotas with the able-bodied criminals and paupers of Europe. The Union army surgeon, of experience, knows something of this. Officials of European municipalities, having charge of their poor, believe in the law of heredity, they understand its effects, and the poor family, rich in children, but tainted with an insane heredity, and likely or liable to become a public charge, is shrewdly selected by these wise officials to "leave their country for their country's good." The shiftless, the improvident, the lazy, the social "crank," the religious "crank," and the political "crank," all come—some voluntarily and many involuntarily—some assisted by the beadle and some by the constable—but they come, to this land of freedom—freedom to live at some other man's expense. But the mere tax, the money aspect of this blight, is of little consequence compared with the fact that so many of them come with inherent qualities that in the next generation dilute and unbalance the brains of our native people, taint their vitality, and vitiate their morals; and, third, insanity is increased among our native whites, by intermarriage with this foreign, tainted element. We have found from the census of 1880 that this foreign-born element—one-eighth of our population—furnishes one-third of our paupers, one-third of our criminals, and one-third of our insane. Can this immigrant element, with its large proportion of insane, intermarry, as they do, by the million, with our native men and women without imparting their large proportion of inherent defects to their children? Do not these children (native born Americans, of course,) increase the proportion of insane to native white population, and still further add to the mischief done by corrupting and increasing the tendencies of the native stock to develop the mental defect? Who can doubt that they do? This body—this American Public Health Association—not to speak of the medical profession—is composed of men who measurably comprehend and who fully believe in the law of heredity, that law by which the qualities, good and bad, of parents, are imposed on their children—I ask you if this intermarriage of millions, more or less tainted by Old World defects, with our sounder native stock, can fail to increase the ratio of native insane to native population? Which of you will answer no?

In 1870, according to Dr. Jarvis, there were 500,000 of this native born, mixed breed, of the first generation, mingled with our population, and 500,000 more of the second and third generations. Table

107, of the census of 1880, shows this mixed element, the mixed progeny of natives and foreigners, to amount to nearly 2,000,000.

Attention was called by note 7 (following the table) to the larger ratio of insane among the native whites of the Northern States, than is found in the same class in the Southern States. The census shows that nine-tenths of the foreign born are found in the Northern States, and nearly all this mixing of breeds is there; is it strange, when examined by this light, that the native whites of the North show a much larger proportion of insane than their Southern brethren of the same class, among whom this foreign element is small, and these mixed marriages are relatively few? These figures are full of meaning to the native whites of the North; they show that we are developing a much larger proportion of insane than the native whites of the South; they show, too, the causes of it, and we have a special interest in finding remedy or relief.

Finally, can there be a rational doubt—indeed, is it not certain—that the influences and agencies, thus briefly sketched, have already so tainted our native stock, with their hereditary and transmitted traits, that our annual insane product is increasing by a ratio to population notably larger than it was two years ago? Would we be more sure than we now are of the general fact, if census statistics had been so shaped as to enable us to state the precise mathematical value of the fact? If, then, it be a fact, shall we do our duty to the people and the country, if we neglect to give the warning which it is the province of science to give, and which, if we are true men, we will give, that all proper agencies may be invoked to check or to mitigate the mischief?

Mr. Wines, special agent in charge of the census statistics of defective classes, seems not to have observed the significance of his own results on this subject. "The tendency to insanity among the foreign population," he says, "is especially worthy of attention." "*It may be accounted for,*" he continues, "*in many ways*" (italics are ours); "for instance, by change of climate and habits of life, by the increased anxiety and effort to advance in the scale of social respectability, by homesickness, and, in general, by the removal of the props which sustain and steady a man who does not emigrate, but remains in the vicinity where he was born." These, it is true, are exciting, but they are not predisposing causes of insanity, and they are entitled to due consideration; but how insignificant they are, as producing causes of insanity, when compared with the physical agency of a tainted heredity. But he adds (and as if he was accounting for the whole difficulty), "The same increased tendency to insanity may be discovered (but in a less marked degree) in Americans who remove from one section of the country to another, especially from the Atlantic to the Pacific coast." Where he finds his authority for this latter assertion he does not say. The statistics of the Territories (excluding the District), as furnished by his own tables, show that the proportion of native white insane to native white population is 1 in 1,281—the smallest proportion of insane to be found in any large locality in the United States. In California the proportion of insane in the same class is 1 in 658, nearly equal to the proportion in the Southern States, and notably less than in the Northern States. In Oregon, with a small native white population, the proportion is 1 in 575, a proportion which is a little larger than the average of the Northern States. But what a very unsatisfactory basis it is on which to construct a theory to account, by moral disturbances, for the deteriorating effects of an imported and a propagated heredity that produces in 6,000,000 of foreign people, and from more of mixed breeds, a proportion of 1 insane in every 250 of population. Furthermore, before we can accept as satisfactory Mr. Wines' statement of the causes of this remarkable ratio of insane to the foreign born, we must ask him to go back to 1850, and explain why it is that the causes he now assigns for the difference, which were just as numerous then as now, and just as potent then as now, did not produce results then as now; for then the proportion was nearly equal in all white classes (native and foreign), while now it is three of foreign to one of all white natives. It will be no answer to this proposal to say that the statistics of 1850 are defective. It is admitted that they are defective *in their aggregates,* but not in their relative *proportions* and *fairness* to the different classes of population.

If the increased aggregate of insanity and the increased ratio of its production in the United States may now be assumed to be proved, the next thing to be considered by us, as practical men, is the remedy. "What are we going to do about it?" It is a question we must carefully consider before we express an opinion, much more before we offer advice.

So far as the increasing ratio of insanity to population is enhanced by the unsanitary life and by the intense exhausting activities of our native population, it is enough, for present purposes, to say that the remedy for all these evils must be found in the diffusion of required knowledge and the operating of nature's conservative laws. If the intensity of our life prove to be the chief factor, our people must learn to live within their vital as well as their pecuniary income.

But the important practical question relates to the abatement of the unnatural increase of insanity by immigration—to the turning back, from our national thresholds, those who come here only to fill to repletion our asylums, poor-houses and prisons; to burden our humanity and our pockets to provide them accommodations and maintenance; and who (worst of all) deteriorate, by inexorable laws and agencies of heredity, the mental, moral and physical endowments of a nation. What are we to do with the defective immigrant?

What do European governments do with him? By the most disinterested eloquence they induce him, and by the most generous policy they "assist" him to become an immigrant; and so they solve their problem. Is any one simple enough to think that this policy is announced in their "blue book," "red book," or any other kind of official book or form? When this policy and practice are charged on their officials, does any one expect them to admit it? One

can easily imagine the reproachful expression of injured innocence, coupled with the complacent folding of his hands across his capacious and compassionate bowels, with which Mr. Bumble would receive such an intimation. After he and his official associates had completed and put in use their brilliant invention of work-house diet, consisting of "much water and a little oat-meal," it is also easy to imagine his deprecating gravity when charged with a deliberate purpose to starve the poor to death or—to emigration. But we do not need to resort to fiction nor to Europe to find illustrations of the way the official almoners of public charity receive suggestions that their Bumbleian "political economy" is born of a tricky and dishonest selfishness. Who here has not noticed the American overseer or superintendent of the poor and his air of self-satisfied reticence just after assisting, with charitable railroad fare, a poor family to—the next town?

But what have we done, in the past, with the defective immigrant? As stated in another place and for another purpose, the Legislatures of several seaboard States having ports of entry have tried, by law, to protect their people from the unnatural burthen. But all in vain. They, too, have tried the "move on" policy, and these foreign "poor Joes" have moved on and are now "moving on," by tens of thousands, to other States in the interior, to be, wherever they are, a public charge, and a living pestilence. And what have these States, in the interior, done? Nothing—except to bear a great, a needless, but a hitherto unavoidable burthen.

What can the State do to mitigate or abate these evils? Nothing—absolutely nothing. To stop the immigrant before landing is to encroach upon the exclusive power of Congress to regulate commerce. After he has landed, it is too late to make any law effective to protect the public from the imported burden. It is true, this mere *right* of a State to inspect immigrants to ascertain whether any are likely to become a public burden, is recognized; but every act ever passed by a State to efficiently exercise the right, has been declared unconstitutional and void.

The leading case, in which the power of the States in this matter was decided, is that of Gibbons vs. Ogden, 9 Wheaton. This has been followed in Brown vs. the State of Maryland, 12 Wheaton; New York vs. Miln, 11 Peters; Groves vs. Slaughter, 15 Peters; passenger cases, 7 Howard; and in February last, People of New York vs. Compagnie Germale Trans-Atlantique, published in the Albany *Law Journal* of April 7 last. Still later and the case had been decided in California by the Circuit Court, in which the precedents were faithfully followed. These references are given to aid any who wish to investigate the legal aspects of our question. They contain much interesting reading.

If States cannot protect themselves, have we no other resource—or must we sit down and stolidly submit to the eating of our substance and the tainting of our blood by the outcasts and pariahs of Europe? Yes, there is, there must be a way to resist this tide of cranks, deadbeats and lepers—a way, too, not in conflict with the Constitution, nor with the healthy interests of commerce or of proper immigration. You must appeal to Congress, whose jurisdiction in the premises is supreme and exclusive. The necessity of an appeal to our Federal Legislature brings this paper to this body of sanitarians, whose members come from all the States, all being affected by the curse, and especially the Northern States and Territories.

Before we consider what Congress may do, let us inquire what Congress has done? For thirty years the evils herein described have been manifest, and several States have tried, but vainly, to protect themselves. But Congress has done nothing—until August, 1882—when it passed an act to regulate immigration. By this act all aliens arriving by "steam or sail vessel" at "any port in the United States" are required to pay a tax of fifty cents to create a fund for the care of arriving and distressed immigrants; this fund is to be expended at the ports of arrival only. How can such an act help the interior States to care for the pauper immigrants that swarm to their borders? But it appears that this law is but imperfectly executed—that in some localities there is no attempt to collect the tax or to enforce any provisions of the act. For instance: Immigrants do not arrive at Detroit and Port Huron by "steam or sail vessel," they come by rail. They come by "steam or sail vessel" to Canadian ports, where no United States tax is collected. The reports of the Bureau of Statistics show that nearly 100,000 immigrants entered our territory at these two points during 1882. Of course they pay no tax, and the immigrants, or the Grand Trunk Railway, was $50,000 ahead. The passage of such an act, insufficient even to take care of the immigrant at New York, and wholly inoperative at Detroit and Port Huron, and of no benefit to the interior States, is all that Congress has ever done to regulate immigration, and this has, and can have, no effect to prevent the arrival of improper persons.

The question remains—What shall we ask Congress to do to mitigate and prevent these great and growing evils complained of? Shall immigration be stopped or seriously impaired? No, a thousand times and for a thousand reasons, no. But the insane, the pauper, and the moral and physical leper we do not and must not admit.

In answer to the difficult and important question, what shall we ask Congress to do, the writer offers, with great diffidence, the following suggestions for your consideration:

1. The true place to prevent the coming of the unwholesome and the dangerous immigrant is not at the port or point of *entry*, but at the port of *departure*. Of this it may be said, at once, we cannot enforce our laws and rules on a foreign soil and under a foreign Government. Perhaps we can—wait a little and see.

2. The Supreme Court of the United States has decided, practically, that the regulation of immigration is a regulation of commerce, and that this power belongs exclusively to Congress. The regulation of that class of immigrants that should never be permitted to land, because of the danger they bring to public health, is, after all, akin to *the question of quarantine* and should be under the charge of medical ex-

perts. A constitutional basis beyond controversy and a grand function are furnished right here for a national board or bureau of health and immigration.

3. Organized properly, it should have at all ports in the United States, where immigrants arrive, all needed agents and representatives; but more important than all, its agents should be attached to consular offices or agencies abroad wherever needed.

4. Aliens proposing to travel or trade temporarily on our soil should so declare or affirm at a consular office, and receive a consular certificate showing their avowed purpose.

Every other alien proposing to emigrate to the United States should be examined; should furnish proof (in form and kind such as the law may specify) to satisfactorily show that he has never been convicted of crime (political offenses excepted); that he is not insane and never has been; that the same is true of his wife and children if he have them; that insanity has never afflicted his parents, or either of them, and that he is not a pauper, and never has been because of any permanent inability to support himself by labor. If the proposed emigrant is found to fulfill all legal requirements, and not likely to become a public burden, a certificate, jointly executed by the consul and the public health agent, containing his full personal description, and showing his healthy character, should be given him. This consular ticket, in effect, will be much like the clearance papers given to a vessel departing for one of our ports, which is often called "a clean bill of health."

The cost of the plan may be defrayed as the existing law is—by taxing all immigrants. But this should not be done. This Government should be ashamed to levy such a tax. A law that will effectively protect us from defective immigrants will soon save its cost of enforcement by reduced taxes in the States to support them. It will cost less to enforce an efficient law than it now costs the people to do nothing.

Mr. President and gentlemen, if we use our influence in our various relations, and vigorously present the *facts* disclosed by the census of 1880, we shall soon be able to secure favorable action by Congress.

The proposed legislation may be opposed, but not openly, except by those ignorant of the extent of the danger. The statistics—the facts—must be our chief weapons, and with them the battle can be won.

At the conclusion of the reading of the paper, Dr. Kedzie offered a resolution expressing as the sense of the Association that legislation should be taken by Congress at its coming session to put a stop to the coming to this country of the criminal and pauper classes and those with an insane heredity, and, on motion, the rules were suspended for the purpose of taking immediate action upon the resolution.

Dr. Wight hoped that the resolutions would go to a committee for consideration. He was not prepared to charge the governments of Europe with wilfully and maliciously shipping off their criminals and insane people to this country.

Dr. Devron said that in New Orleans it is impossible to go a block without meeting foreign paupers and foreign beggars exhibiting their deformities and asking charity.

Dr. Walcott, President of the State Board of Health of Massachusetts, said it is an indisputable fact that our poor-houses are filled with foreign paupers, our hospitals with foreign cripples, and our insane asylums with foreign insane persons.

Dr. Ames said that to defer action for a year is to lose a year, and in view of the slowness with which Congress acts in international matters, it is best to lose no time.

Dr. Gihon moved that the resolutions be referred to the Advisory Committee; that the Chairman submit the same to its various members, and if a majority thereof favor them, that they be transmitted to Congress.

The question of expediency was discussed pro and con by several members, and then a motion to lay the resolutions on the table was lost, 15 to 23.

Dr. Gihon then withdrew his motion.

A motion by Dr. Wight, to refer the resolutions to a special committee, to report at the next meeting, was lost.

The resolutions were adopted, 30 to 1.

NEW ANÆSTHETIC MIXTURE DEVISED BY WM. A. BYRD, M.D., OF QUINCY, ILL.—ITS COMPOSITION AND EFFECTS.

BY CHARLES WESLEY ROOK, M.D., QUINCY, ILL.

This is a compound anæsthetic, recently prepared by Dr. Wm. A. Byrd, Quincy, Ill., and so far as I know, he is the only surgeon who is, at present, using it. It is composed, by measure, of bromide of ethyl, one part; chloroform, three parts; alcohol, four parts. These substances, mixed, form a clear solution, of a pleasant odor, and of a warm, sweetish taste.

HISTORY OF THIS ANÆSTHETIC.

Dr. Byrd, not being satisfied with the anæsthetics in general use, having seen two deaths from chloroform, one occurring in his own practice, and disliking the stimulating or exciting properties of ether, began experimenting to see if he could not discover or prepare an agent which would better suit him for anæsthetic purposes. Knowing the physiological actions of chloroform, that the greatest danger from its use lay in the extreme anæmia of the brain and nervous system; that in this condition of anæmia, there was not sufficient blood carried to the nervous centers controlling the organs of circulation and respiration to enable them to continue their functions, and thinking that if he could combine with the chloroform, some agent that would overcome this tendency to extreme anæmia, without impairing the anæsthetic properties of chloroform, his object might be obtained.

Having a knowledge of the physiological properties and actions of ethyl bromide, and its power of causing congestion of the face and brain, he was led to begin experiments with these two agents. The result of these experiments proved to him that if these two agents were combined in the proportions of three parts, by measure, of chloroform to one part of ethyl bromide, the anæmic and depressing action of the chloroform was counteracted by the ethyl bromide,

and that the excitement and congestion of the brain caused by the ethyl bromide was antagonized by the chloroform, so that, in the production of anæsthesia, there was no noticeable or marked change in the blood supply of the face and brain.

PHYSIOLOGICAL ACTIONS OF THIS ANÆSTHETIC.

I have administered this anæsthetic to a number of patients, varying in age from early childhood to adult life; to those enfeebled by disease or suffering, and to those apparently healthy; for operations comparatively trivial, and for others which were protracted and serious; inducing and sustaining complete anæsthesia, in some cases, only for a few moments, while in others for more than an hour; and in all these cases, with their varying circumstances and conditions, I have observed a remarkable similarity in the physiological actions of this anæsthetic. The stage of excitement or intoxication is brief, sometimes absent; if occurring, is never violent. The stage of spasmodic rigidity of the voluntary muscles seldom occurs; when occurring, it is not extreme. Following these stages, when they are present, or within a few minutes from the commencement of the inhalation, the stage of complete anæsthesia is induced, when any unfavorable or alarming conditions or symptoms occurring in the preceding stages, as excitement or rigidity, will be relieved, so that the vital functions are carried on as regularly, and apparently as effectually, as if the patient was in a natural physiological sleep.

The time required to produce complete anæsthesia is from one to three minutes in children, and from three to five, and possibly eight minutes in adults. When inhaled, and especially if inhaled through the nostrils, patients will sometimes complain of a choking or suffocating feeling, probably due to some spasmodic condition of the glottis or larynx, which is quickly relieved by requesting the patient to inhale, through the mouth, three or four deep inspirations. Sometimes, though very seldom, coughing will be caused, perhaps due to the action of the anæsthetic vapor upon the over-sensitive bronchial mucous membrane, but it is quickly checked by pushing the anæsthetic a little more rapidly. Nausea and vomiting may occur, more apt to when administered soon after eating, and, like coughing, may be checked by crowding the anæsthetic a little faster.

Effect upon the eyes:—Soon after the inhalation is begun, and especially if the stage of excitement is present, the pupils are dilated, but when complete anæsthesia is induced, they are more or less contracted; the conjunctiva is usually insensible to irritation, but I have seen a case in which the degree of anæsthesia was sufficient to admit of the thorough and extensive application of the actual cautery, and yet the conjunctivæ remained sensitive, and the pupils responded quickly to light.

Effect upon the circulation:—At the commencement of the inhalation, the pulse, either from excitement or in anticipation of the coming operation, would naturally be somewhat quickened, but when complete anæsthesia is induced the pulse becomes slower, fuller and stronger.

Effect upon the respiration:—This is at first stimulated, but when insensibility is induced it becomes slower and more regular, very much resembling the respiration of natural sleep.

Effect upon the temperature:—It is generally lowered more or less, as the skin is usually moist, and occasionally free perspiration occurs.

During the stage of complete anæsthesia, the eyelids are closed, the face retains its natural color, so that the countenance looks peaceful and placid.

The duration of the stage of anæsthesia is variable; in some, complete consciousness returns within a few minutes after the administration is discontinued, while in others the stage of anæsthesia seems to be followed, without any intermission, by a period of natural sleep which may continue from ten to thirty minutes, or even longer, from which, on awakening, the patients seldom have any symptoms referable to the anæsthetic.

In the preparation of this anæsthetic, it is believed that no new chemical compound is produced; that the ingredients, not entering into a chemical union, simply form a mixture. The alcohol was added as a diluent or vehicle for the better administration of the chloroform and ethyl bromide. Although alcohol, alone, is employed by some, more especially by Dr. John E. Link, of Terre Haute, Indiana, but little of the virtues of this anæsthetic, except, perhaps, the sleep following the stage of complete anæsthesia, are attributed to the alcohol.

ADMINISTRATION.

Because of the quantity of chloroform entering into its composition, a considerable amount of atmospheric air should be inhaled along with the anæsthetic. It has been administered most frequently through an inhaler,—Dr. Jos. C. Hutchinson's, of Brooklyn, N. Y. But the same results have been obtained when simply a towel was used as an inhaler. At the present date, Nov. 30, 1883, anæsthesia has been produced in ninety-eight cases, without causing any bad effects, save vomiting in three cases. The quantity necessary to induce and sustain anæsthesia, depends, of course, upon the duration of the operation. A half drachm poured into the inhaler, or upon a towel, will generally be sufficient to induce anæsthesia, which may be sustained by the addition, from time to time, of half the former quantity.

MEDICAL PROGRESS.

THERAPEUTICS AND MATERIA MEDICA.

NITRITE OF SODIUM AS A TOXIC AGENT.—Drs. Sydney Ringer and William Murrell have given the result of their observations on this drug (*Lancet*), and conclude that as the drug now found in the market is almost pure, much greater care must be taken in its use than formerly, when it was a mixture of nitrite and nitrate of sodium, the latter predominating. In those cases in which twenty grains are stated to have been given three times a day for three months or more, the drug was undoubtedly impure, for so large a dose could not have been administered

for so long a time with impunity. If the pure nitrite of sodium were administered in the doses in which the impure drug was formerly given, the effects might be disastrous.

In describing the toxic effect, they accept the conclusions of Reichert, quoting him as follows: "The nitrites cause the arterial and venous blood to become of a uniform dark, venous color, having a distinct brownish or chocolate shade, and that this is due to the conversion of the oxyhæmoglobin into a nitrite oxyhæmoglobin, and that the nitrite blood possesses very little oxygen-absorbing power, and as a sequence, hæmic respiration is seriously interfered with and tissue metamorphosis diminished." The respiratory movements are primarily stimulated by the asphyxiated blood, and then depressed, while there is a loss of contractility in the voluntary muscles. Eighteen adults took, under their observation, ten grains of the pure nitrite of sodium in an ounce of water, with the result of producing extremely marked and disagreeable symptoms of faintness, nervousness, and pain in the head. Sixteen patients were then given five-grain doses, with the same symptoms resulting. Nausea with eructation was of frequent occurrence, and in one or two cases there was actual vomiting. Thirteen patients were given three-grain doses; only four complained of the symptoms, which were of the usual form—nausea, blue lips, headache, and giddiness.

On the Use of Lythrum Salicaria.—Dr. Campardon, in the *Bulletin Général de Thérapeutique*, extols the use of this remedy very highly in acute or chronic inflammations of the gastro-intestinal mucous membrane. In his opinion, the previous want of success in its use has been due to the way in which it has been prepared; as for example, it has been used more as a decoction than as an infusion—containing tannin and a large proportion of mucilage, as it does, a prolonged *coction* would destroy the mucilage. He cites cases of dysentery, of acute and chronic diarrhœa, particularly when dependent on an atonic condition of the intestine—or as observed in the convalescence of typhoid fever—and in the diarrhœa of children occurring in the course of dentition, where he has readily and easily checked the disorder. The drug has shown that it has not only a slightly astringent character, due to the tannin, but also that the mucilage quiets the pain, modifies the secretions, and manifests a general sedative action. The effect of the drug does not seem to be to produce the dry, painful constipation, as with bismuth, for example, but rather to restore the condition of the bowels and stools to their natural state. An excessive dose (10 to 12 grammes per day), will produce a gastric disturbance, giving the mouth a taste of the drug, an increase in the number of passages to sometimes six per day, and a diminution of the appetite. In affections of the buccal mucous membrane, as ulitis and aphthæ, the tincture of lythrum has been very serviceable. In coryza acute vaginitis with hypersecretion, chronic catarrhal vaginitis, vulvar prurigo, eczema and intertrigo, the drug, powdered and applied locally, has proved beneficial. In the acute stage of varicose ulcers, the powder of lythrum has lowered the temperature, relieved pain and hastened the formation of the cicatricial pellicule; the ulcer being washed morning and evening with a strong infusion of lythrum, and the powder renewed daily over the surface of the ulcer. Its use has been recommended in hæmoptysis, but Dr. Campardon tried it in several cases without success.

The preparations are: Infusion—30 to 40 grammes of the leaves and incised stalks to 1,000 grammes of water.

Powder—3 to 5 grammes in 24 hours, 1 gramme in a wafer as a dose. The highest dose used was 8 grammes, in a case of chronic diarrhœa of four months standing, which was relieved in less than three weeks.

Extract—2 to 4 grammes a day, in solution; children take readily a syrup made of 1 gramme of the extract to 30 grammes of syrup, given by the coffee-spoonful each hour. The extract mixed with the powder to form pills of 20 centigrammes each, is more acceptable to some persons than the powder alone.

Tincture—20 drops on a lump of sugar, four or five times a day.

For external use—3, 4 or 5 tablespoonfuls in a sufficient quantity of water to form an injection or lotion—or dissolved in the tincture of salicylic acid (1 gramme to 25 grammes); two or three tablespoonfuls in a sufficient quantity of water as an injection or lotion.

SURGERY.

Treatment of Fracture of the Patella.—At the one hundred and eleventh session of the Medical Society of London, so the *Medical Times and Gazette* tells us, Prof. Lister recorded the treatment of seven cases of fracture of the patella, which were cut down upon and wired together. The operation consists in making a longitudinal incision over the middle of the patella, cleaning out of the knee joint any blood clots which may have collected, freshening the broken surfaces of the patella, and then wiring them together. In this manner bony union is secured. The cases were of two kinds—recent, and those in which some time had elapsed since the fracture, and where there was fibrous union, with a greater or less interval between the fragments. The recent cases are, of course, the more easy and satisfactory to treat; there is no difficulty in approximating the fragments after the blood clot and effused matter have been sponged out of the joint. But, in the older cases, the fragments are often widely separated; possibly there is contraction of the quadriceps tendon, which must be divided; or the fragments of bone may be atrophied. Examples of these conditions, with the result of the operation, were exhibited to the meeting. It would be impossible to speak too highly of the results obtained; bony union of the fragments, with almost perfect movement of the joint, had resulted in every case.

Fourteen Fractures in the Same Subject; Death Four Years Later from the Effects of a Burn.—M. Fernand Giraud, under this heading,

gives us, in the *Marseille Médical*, what might, on a pinch, almost furnish material for a winter's surgical course. The case in question was a man 42 years of age, and the interest in his case consists in enumerating the injuries which he received, at various times in his life, and satisfactorily recovered from:

As a zouave in Italy he received a bayonet wound in the neck, of which he carried the scar; in the left hand a sabre cut, which required the removal of the fourth and fifth fingers. A gunshot wound fractured the condyle and epicondyle of the right arm, causing great difficulty in supination. On his discharge from the army he worked as a day laborer, when a bank of earth falling on him, he was taken to the hospital and found to be suffering from concussion of the brain, with fractures of the inferior extremity of the right radius; of the left leg, six centimeters below the knee; of the sternum, five centimeters from its superior extremity, so that at each expiration the lower extremity glided forward in front of the upper; of the third, fourth, eighth, ninth, and tenth ribs, about their middle, the cartilages of the fourth and fifth ribs being also the seat of a solution of continuity; and of the second and third lumbar vertebræ. After passing through a serious attack of pneumonia while in the hospital, the patient recovered, with a sligh deformity of the sternum (a riding up of the fractured ends) and a numbness in the right leg, he being obliged to use a cane. There was no cough aud no difficulty in respiration; the left wrist was slightly deformed, flexion and abduction of the hand being difficult. The bladder remained irritable, but there was no constipation.

His third visit to the hospital was for the treatment of a burn received in a soap factory—slight in degree, but involving a large extent of surface over the abdomen and back, resulting in a diarrhœa and death. The autopsy was most interesting in the study of the fractures of the sternum and vertebræ. The union of the sternum was so complete that an incision in the median line did not show any separation between the two fragments. The condition appeared as that of congenital deformity. The fracture of the vertebræ was one of crushing and penetration; the third lumbar vertebra had been crushed by the second, which penetrated into its tissue so that the intervertebral cartilage had disappeared, and in the midst of the solid mass formed by the two vertebræ only one line of separation was perceptible, and that on the inferior face of the superior vertebra.

MEDICINE.

A CASE OF LIGHTNING STROKE.—John Gale Mackay, M.B., gives in the *Glasgow Medical Journal* the details of a case, with a photograph, which delineates that curious arborescent appearance upon the surface of the skin which has been before described, but which is so rare, and remains usually for so short a time, that many doubt its existence.

This case was a boy of thirteen, who was marked upon the arms, and the photograph was taken four hours after the accident. The marks began to fade three hours after the accident, and in 22 hours they had entirely disappeared. The boy was stunned by the shock, and thrown down with such violence as to be severely hurt about the face and forehead. The arms were paralyzed in motion for a time, the boy being unable for some time afterwards to draw his hands out of his pockets, where they were placed at the time of the accident; there was also a sensation of numbness and cold, and the boy fancied that his arms were broken off at the elbow. Later, upon his complaining of a burning heat in the arms, they were examined and the markings noted. These markings seemed to radiate from two centers, as if the lightning had first struck the arm in two places, and had thence broken over the surrounding skin. They stretched from below the left elbow to the shoulder, and threw branches across the left chest, resembling closely images of the frouds of a fern. There were no local after effects, such as vesication or shedding of the skin.

TOXICOLOGY AND MEDICAL JURISPRUDENCE.

POISONING FROM EATING SNAILS.—Our French neighbors, since Dr. Chrestien affirmed that snails constituted a most effectual remedy against diseases of the chest, have given them most marvellous properties, and indulged their appetite for them to an increased extent. Now, we find in the *Gazette Hebdomadaire des Sciences Médicales* the record of four cases of poisoning from eating three to thirty snails. These cases all occurred in one family, as the result of one meal, and the symptoms were those of colic, vomiting and purging, with nervous prostration. It seems that snails to be suitable for eating have to undergo first a process of starvation and purging to dispose thoroughly of certain offensive and poisonous articles of food which they are fond of. So the writer, Dr P. Ducloux, declares that eight days of starvation is not long enough to effect this process, and that forty days should elapse. Where is the Society for the Prevention of Cruelty to Animals?

ANATOMY AND PHYSIOLOGY.

A CASE OF ANOMALY OF THE URETERS.—M. M. P. Souge describes in the *Marseille Mèdical* an autopsy made on a man 54 years of age where the left kidney was provided with two ureters. They were completely independent at their origin and throughout their entire course, uniting at the vesical portion and forming a single orifice at the level of the trigonum. They originated in the pelvis of the hilum—one by six calices, and the other by two calices. As they entered the walls of the bladder, they were separated by an interval of three millimeters, to unite while passing through the walls of that organ.

THE

Journal of American Medical Association.

PUBLISHED WEEKLY.

THE EDITOR of this JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information, should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

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SATURDAY, DECEMBER 15, 1883.

COLLECTIVE INVESTIGATION OF DISEASE.—A few weeks since, after explaining the system of the Collective Investigation of Disease inaugurated by a committee of the British Medical Association, we invited such members of the profession in this country as were willing to engage in such work to send their names to the office of this journal and we would see that they were supplied with the proper memoranda and cards, with a view of inaugurating the work in this country in harmony with that in England. A communication was received from the committee of the British Association inviting co-operation, and presented to the recent annual meeting of the American Association in Cleveland. It was received and referred to a standing committee, already appointed, with instructions to report at the next meeting of the Association. In the meantime, a committee of the Illinois State Medical Society has caused the printing of several of the most important memoranda and cards issued by the committee of the British Association, and in addition to supplying the members of that society, it has placed at our disposal a sufficient number to supply any others who might respond to the invitation given in this journal to send in their names.

As explained in the previous editorial on this subject, the printed memoranda in relation to the diseases to be investigated, are simply intended to call the attention of the investigators to the more important topics to be noted. Only two cards on which to make returns of cases will be sent to each member of the Association whose name has been received. But as many more as may be desired will be furnished to those who return the first two properly filled accompanied by a promise to continue the work. As members of the committee to whom the subject was referred at the last meeting of the Association, we have felt at liberty to encourage these practical steps in advance, since it could be done without drawing any funds from the treasury of the national organization. And the results may enable the committee to make a more reliable report on the feasibility and value of the whole scheme than would be possible without them. All members of the Illinois State Medical Society may return their cards as soon as filled directly to Dr. J. F. Todd, Chicago, who is Secretary of the committee of the State Society. But all members of the American Medical Association, not members of this State Society, may return their cards as soon as filled to the editor of the JOURNAL, 65 Randolph St., Chicago, and at the same time indicate whether they wish more blank cards.

PHYSIOLOGY AND HYGIENE IN LITERARY COLLEGES.—In a considerable number of the best colleges and universities in our country, some attention is given to instruction in physiology and hygiene; but in none of them do these important branches of science occupy the prominent position in the curriculum of studies that they merit. We notice, with pleasure, that Center College, at Danville, Kentucky, has recently created a lectureship on Physiology and Hygiene, and filled the place by appointing Dr. Louis S. McMurtry, of that city. This is certainly an educational step in the right direction, and the selection of the right man for an important position; one preëminently fitted for the work assigned him.

CHANGES IN MEDICAL JOURNALS.—From the notices received during the last week, we judge that the ambition for publishing weekly medical journals, so strongly manifested during the last few years, has passed its climax and entered upon the stage of decline. It is only one or two years since the New York *Medical Journal*, *Gaillard's Monthly*, and the *Sanitarian*, all well established monthly medical periodicals, donned the weekly dress, making, with the *Medical Record*, four leading weekly medical journals in the city of New York. The second one named returned to the monthly form before the end of the first year; and with the last *Sanitarian*, comes the notice that it will also be returned to the form of a monthly with the beginning of the new year. We also learn that the Pittsburg *Medical Journal* has closed its career for the present, at least, and its late

able editor, Dr. Thomas Gallagher, proposes to visit the countries on the other side of the Atlantic. With the December number of the *Medical Herald*, of Louisville, its late able editor and proprietor, Dr. Dudley S. Reynolds, retires from his connection with it, having sold his interests to the publishers. It is announced that Drs. Edward Miller and W. N. Galt are to be the editors under the new arrangements. We congratulate the retiring editor, both on account of the reputation he has won and the prospect of more peace in the future, and cordially welcome his successors to a field of labor affording opportunities for much usefulness, but not altogether blooming with roses.

NOTICE.—A neat little medical periodical, called the *Polyclinic*, which does a part of the advertising for a circle of specialists in Philadelphia, recently headed its leading editorial with the announcement, "A Proof Reader Wanted!" Now, if our sprightly neighbor of the Quaker City really needs a "Proof Reader," we would kindly inform him that during the past few months we have had two or three connected with this office whose services are no longer needed, and we presume one of them might be obtained, provided fair wages were offered.

TO SUBSCRIBERS.—The first volume of this journal will be completed with the last number in this month, that all subsequent volumes may commence with the first weeks of January and July of each year. The last number of each volume will be accompanied by a title page and index. All members of the Association who pay their membership dues receive the JOURNAL for one year, thus getting two large volumes per annum. Subscribers who are not members of the Association, and consequently have less interest in preserving a complete series of volumes, can commence their subscriptions with either January or July, and have the volumes for which they subscribe complete, without taking back numbers. Consequently, now is a good time for new subscribers to make their remittances, to commence with the first of January, 1884.

NEWS ITEMS.

DISEASE ON THE TAPIS.—Under this heading, the *British Medical Journal* says: "A correspondent of the *Standard* very judiciously points out that the present eccentric fashion of furnishing drawing rooms with old Oriental rugs is both offensive and hazardous. These rugs, when they are what they are represented to be, have been used as 'passage rugs' for long periods, sometimes reaching up even a hundred years; and must, in many instances, have been knelt upon by persons affected with leprosy and other loathsome diseases. Now, the odor of sanctity is not a good disinfectant; and the danger is that these faded and frowsy floor-coverings may import amongst us some very unpleasant maladies. Old Persian rugs should either be banished from English homes, or should be baked before being introduced into them, to a degree that will add the charm of singe to that of tinge."

MALPOSITION OF A TOOTH.—The *Lancet* records a case of supposed tumor in the left nasal cavity, which, on its removal, proved to be a tooth resembling a canine tooth. It occurred in a boy of fourteen years of age, who had got his set of permanent teeth, with the incisors and canines entire on either side. There was no deformity of the jaw and no swelling or cystic formation. It was clearly a case of extra follicular development and eruption of a tooth in a wrong place. The dental follicle was transposed, and the eruption was from above downwards, the root being deeply imbedded in the side and upper part of the antrum.

PROF. EMIL DU BOIS REYMOND.—At Berlin University, on Oct. 20, was held the twenty-fifth anniversary of Prof. Reymond's occupancy of the chair of Physiology, in the presence of Ludwig, Heidenhain, Rosenthal, Bernstein, Holmgren, Leube, Gad, and Tschiniw. Prof. Heidenhain made the presentation of his bust. Prof. Rosenthal gave a jubilee volume of the *Archiv. für Physiologie*, which contained contributions from seventeen of Prof. Reymond's former pupils, all of them now well known in the various continental universities.

SOCIETY PROCEEDINGS.

THE CHICAGO MEDICAL SOCIETY.

At the meeting held on the 3d inst., at the Grand Pacific Hotel, Dr. E. L. Holmes presided, and two original papers were read.

The first was on the Treatment of Bright's Disease, presented by Dr. Charles W. Purdy, and is a very lengthy article, and concludes a series of three papers the writer has prepared and read before this Society during the past year, comprising in all at least 400 pages of manuscript.

This last one is very comprehensive, and from the wide range of therapeutical remedies used in this disease he has narrowed to a much lesser number, and determined more accurately their efficacy, which was very desirable. The following is a brief abstract:

Bearing in mind that the chief function of the kidney is the removal of nitrogenous waste from the system, it is possible to lay down a few general rules for management of the whole class of diseases ranged under the term of albuminuria, especially when they reach a point in their progress which seriously embarasses the function of the organ. First in importance, then, may be reckoned the diet of the albuminous patient. The doctrine of a bold resort to nitrogenous diet, is a very dangerous one to practice, especially so in nephritis, for the loss of albumen

by the kidneys, unless very extreme, does not cause the alarming waste that many are led to suppose, and the rapid anæmia of Bright's Disease is not alone due to waste of albumen, but to the overcharging of the blood with tissue waste, which renders that fluid unfit for healthy nourishment, and the pernicious effect of still further loading the blood with highly nitrogenized foods not only increases the evils it is intended to remedy, but it is pretty sure to lead to the most dangerous of complications, namely, that of uræmia.

In treating renal difficulties of this nature, we must bear in mind the importance of retrograde metamorphosis of tissue being present, and as the writer quoted from Fothergill, "that creatinin, tyrosin, and other early products of tissue decay, are in themselves powerful narcotic poisons, but do not pass on into uric acid and urea," hence, only small quantities of nitrogenous foods should be partaken of, with the view of repairing tissue waste, especially as the patient is not taking active exercise. In substance, then, the albumnuric patient's diet should consist of the farinaceous articles, also fish, vegetables and fruits, while meats are to be indulged in sparingly, soups are to be prohibited, and eggs excluded. Cheese must not be used. Fats may be used as freely as the condition of the stomach will permit. Milk constitutes one of the best articles of diet, and small meals, more frequently repeated than usual, is a good rule to follow. Alcohol in large quantities, especially in a concentrated form, is generally believed to be injurious; if it is given at all, it should be well diluted with Vichy or Apollinaris water in excess, whilst the lighter pale ales, or Bavarian beer, are nearly free from objectionable qualities.

The skin should receive systematic care in all forms of albuminuria, and warm flannel under-garments must be insisted upon, with no deviation from being constantly worn, and even so with the care of the feet, which must be no less rigid. The various fabrics and garments used should at all times be dry. The avoidance of exposure to vicissitudes of the weather must be particularly borne in mind. Regarding the climate, it is a fact, that in the two extremes of temperature—the arctic and torrid zones—albuminuria is rare, for reasons, well set forth, that there is the compensation of a tendency to other diseases in those climates, either of the respiratory organs or in the cutaneous system, and intestinal disorders, although amyloid disease of the kidney may sometimes arise in hot climates. The primary seat of this disease, however, is almost never in the kidneys. In America, Mexico presents many advantages; in Europe, the Mediterranean coast seems to give the best results. Rome, Cairo, and the south of France may also be particularly mentioned.

Diuretics.—Under this head of therapeutic measures, much can be said, namely: those that act by increasing the general blood-pressure in the vessels, and those that act locally on the kidney circulation and renal epithelium. Digitalis and convallaria majalis are regarded as fulfilling the first indication; mineral waters also produce this effect. Such agents as juniper, buchu, and some of the resins, if judiciously employed after the subsidence of the acute inflammatory conditions, are often productive of much benefit, also several glasses of distilled water taken daily, and the Silurian water freely drank, and Vichy, may be commended, the latter especially so in cases of gouty history. The Buffalo Lithia Springs water is also valuable in such cases.

Acute parenchymatous nephritis must be met with energetic antiphlogistic measures, and a more successful result will be attained if they be promptly resorted to. We should first secure thorough action of the skin and alimentary canal, and then limit the inflammatory progress going on in the renal tissues. The dry hot air bath is the most efficient means to fulfill the first indication. This practice is the one *par excellence* above all other baths, and the safer method. With it rapid perspiration is induced, and the bodily temperature does not become elevated beyond a degree, or at most a degree and a half. On the contrary, with the Russian bath, the temperature may increase three or five degrees, and the pulse to 150 or 160, and if any heart trouble be present the latter system of baths might prove pernicious, or if uræmia is threatened, the Russian or steam bath might induce convulsions. With the hot air bath a patient may be subjected to free diaphoresis for an hour or two with but little exhaustion. This means should be resorted to daily for an hour, in cases of acute nephritis. The perspiration thus set up may be continued by administering some warm drink. Another remedy may be employed, namely, jaborandi, or pilocarpine, as a diaphoretic. Free catharsis at first unloads the congested blood-vessels, and promotes osmosis and absorption, and should be resorted to, but the subsequent treatment may consist in giving mild aperients. All writers agree that dry cupping is highly efficacious, to be followed with the application of large warm poultices. Mustard may be added to this, and later croton oil liniment; but fly blisters or turpentine should not be used, nor juniper or squill, for they may probably add to the renal congestion, and the writer preferred above all other remedies the following agent, viz., digitalis, as being the most representative. Milk diet should be adhered to in this as heretofore, to the exclusion of meats, and the patient should remain in bed until the acute symptoms have subsided. We should be on the alert for uræmic symptoms. If this complication should appear, the hot air bath should at once be resorted to, its use prolonged until copious diaphoresis is secured, followed with a brisk purge, etc., also bromide of potash, chloral, and chloroform, and perhaps hypodermics of morphia. In this form of inflammation it may be necessary to resort to venesection. If acute chest affections supervene, the usual antiphlogistic measures employed in these inflammations should be supplemented to the foregoing remedies. If dropsy should set in as an obstinate symptom of acute nephritis, special measures for relief of this may be called for, as local erysipelas and even gangrene possibly may supervene, dependent upon that symptom. Punctures of the skin may be necessary, but to do so may endanger sloughing, etc. The trocar or aspirator may be resorted to as a temporary measure to remove fluids from the abdominal cavity,

chest, or pericardium. American hemp may be used with happy results. Given repeatedly, the diuresis arising from the use of this remedy is sometimes very copious indeed.

In chronic nephritis, substantially the same principles for treatment should be carried out as in the acute form, although the remedies should be given in smaller doses and continued systematically for a long period of time. However, one or two other favorable diuretics may be mentioned, viz., the citrate or acetate of potash in treating these cases, or to combine the compound fl. ex. buchu and pareira brava with the acetate, will add to the efficacy of the potash salt. Iron is also required for the anæmia that necessarily must be one of the results of this form of malady, and also removal to a warm climate during the winter months is advisable.

Granular degeneration, which is the most tardy and chronic in its course of all kidney diseases, may extend over a period of fifteen or twenty years, and more than is in the reach of therapeutics can be done, and greater relief afforded, by removal to a warm climate; although a case thus established of renal fibrosis may be nearly hopeless, yet the disease may be arrested and thus limited to a portion of the gland which is already involved, by removal to a temperature of 60° or 70°, with a dry atmosphere, such as Riveira and portions of Italy or Egypt possess, and are recommended as the most healthful for this class of patients. In Rome the disease is almost unknown. Cairo is also lauded, which is situate in Egypt; on this continent, Durango, in Mexico, is spoken of as a climate to be selected, as here the extremes of temperature are but 60° and 80°, and many superior advantages may be had in that country for this class of invalids that are not accessible elsewhere. The rules already laid down regarding the careful regulation of the diet must be strictly adhered to, as well as the other adjuvants for lessening nitrogenous waste in the blood, must be faithfully pursued. In all rational treatment, however systematically and judiciously devised, for renal diseases, we must have constantly in view threatening dangers. For, in Bright's Disease, cerebral apoplexy, uræmia, hypertrophy of the left heart, and other dangerous complications are constantly liable to occur. Iodide of potassium and the chloride of gold have been recommended as exercising a direct curative action on the kidney. The latter remedy has a tonic action on the stomach and uniformly improves the appetite, and may, in this manner, have a curative effect on the disease proper. For dizziness, palpitation, heaving of the chest wall, oppression, full tense pulse, etc., rest, low diet, cardiac sedatives, etc., are indicated. Iron may be given to counteract advancing anæmia, as is done in the chronic stages of nephritis.

Amyloid disease, which differs essentially from the preceding forms, in its nature requires, therefore, a different method of treatment. The causes of it are quite outside of the kidneys themselves, and our measures will be more largely directed to these outside influences. In this form of kidney disease we seldom have to contend against the dangers of uræmia, save near the close of its course. We are thus enabled to give stronger meat diet than in the other lesions. The progress of this disease, *i. e.*, lardaceous kidney, may therefore be controlled just in proportion to that extent to which we are able to control that which gives rise to it, and as dysentery, phthisis, chronic abscess, necrosis, tertiary syphilis, etc., etc., are the most prolific causes of it, we affirm they are, to say the least, not incurable.

Tuberculosis, which is, perhaps, the most fruitful source, requires such principles of treatment in accordance with mature experience to overcome it, as the scientific practitioner may employ. Surgical measures may overcome suppurative processes, and Listerism, thoroughly employed in all its minutiæ, may be found necessary to overcome this malnutrition and drain, and by this procedure we may be enabled to strikingly diminish the amyloid progress.

In this form of disease we may have a most obstinate form of diarrhœa to contend with, due to the degeneration of the small intestinal arteries, the epithelium of the mucous membrane, and the muscular coat of the villi.

Sulphate of copper in one-eighth to one-fourth gr. doses, combined with some form of an opiate, should be preferred to all the other remedies to overcome this complication, but its pathological cause may often times result in a patient's death from the intestinal flux that sets in. Visceral complications are apt to make their appearance, being a part of the same process of degeneration of blood-vessels and deposit of the peculiar amyloid material, as that which forms in the kidneys.

In the foregoing review, the principles involved in the treatment as mapped out by the author, have been studied, rather than the writing of details, which can more safely be left to the judgment of the intelligent physician.

In the discussion, Dr. R. Tilley said he doubted if uræmia was the cause of convulsions. The nervous system, however, is disturbed by the action of the kidneys, and through its influence may bring about this result. The retina undergoes great change of structure, sometimes, in kidney disease, as is seen by aid of the ophthalmoscope. A French physician has recently discovered albuminuric retinitis in one eye of a patient, while the other eye remained healthy. The trouble in the eye increased or diminished, as the albumen increased or diminished. Regarding the baths, he thinks a patient's bodily temperature will rise higher by the use of a dry hot air bath. And, regarding the diet, thinks we should pay at least as much attention to the likes and dislikes of a patient in this as to the chemical constituents of the food, whether it be of carbo-hydrates or nitrogenous.

Dr. I. N. Danforth does not have as good results from the warm baths, of any kind, as from using a steam bath made of six bricks folded in a towel and hot water poured on them, when they are under the bedclothes of a patient, while he is in bed. This crude steam bath works much better than any with which he is acquainted. In using any other form of bath, patients complain of faintness, nausea, exhaustion, etc. He thinks the paper is an excellent résume of the therapeutics of Bright's Disease. Dr. Purdy has no

doubts about the uræmia being the cause of convulsions in Bright's Disease, and also that uræmia produces puerperal convulsions. The pathology of the kidneys of a woman having puerperal convulsions from uræmia is the same as in acute nephritis, and the convulsions are similar. The dry hot air baths are endorsed by high authorities. By this means the heat is conducted more readily from the body. The diet is of the utmost importance, especially regarding meat in nephritis and granular atrophy, in which it is positively pernicious, although some resort to it boldly. But the food that consists mainly of carbo-hydrates should be preferred.

Dr. G. C. Paoli—Few of us can diagnose true kidney disease early. It takes months to do it. Cirrhosis we cannot diagnose at first. I do not believe in the use of pilocarpine. Keep the bowels open freely and with good, wholesome food, is about all that can be done with this class of patients, as we ordinarily see them here.

This was followed by Dr. F. C. Hotz, who read a paper on "The Treatment of Granulated Eye-Lids with Jequirity," giving the result of his experience on sixty-five eyes, by using an infusion of the jequirity seed of the Brazilian shrub. The remedy is popularly known as sea bean, and was introduced by Dr. Wicker, of Paris, as a valuable remedy for trachonia. The infusion is prepared by macerating the pulverized bean for twenty-four hours, and has a very peculiar effect upon the conjunctiva, producing a sort of croupous inflammation, which runs its course within one week, without doing the slightest harm to the conjunctiva or cornea. And when the infusion is applied to granulated lids, the production of the jequirity ophthalmia that ensues is usually followed by the most marvelous improvement in the condition of the conjunctiva and cornea. The doctor summarized his experience in the following conclusions:

(1.) Jequirity is the best known remedy for chronic granular conjunctivitis.

(2.) It is the most efficient remedy for clearing a trachomatous pannus, and in inveterate forms of pannus it is preferable to the operation of peritomy, as well as inoculation of blenorrhœal virus, because it works quicker than the operation, and is safer than the inoculation.

(3.) It has no injurious effect upon the eyes, and can be used with perfect safety, even where the cornea is ulcerated.

(4.) It should not be used while the cornea and conjunctiva are actually inflamed.

(5.) It does not benefit those cases of chronic conjunctivitis in which the symptoms of catarrh (succulence of the retrotarsal folds with increased secretion, etc.), predominate over those of trachoma.

(6 and lastly.) The more violent the attack of the jequirity ophthalmia is, the quicker will be the cure of the granulated lids, and the speedier will the clearing of the cornea be produced.

DISCUSSION.

Dr. R. Tilley, said jequirity has been used all over the world for treatment of granular eyelids, and he thought, by adding a small quantity of hyd. chl. cor. to the infusion, that it would increase the efficacy of the remedy in curing this class of patients.

Dr. B. Bettman said the active principle of the bean is a crystalline substance, and an infusion of it is known to produce bacterial ophthalmia, *i. e.*, a bacillus is formed, or, I may say, a bacteria jequirity is produced on the conjunctiva, this, I think, overcomes the other variety of the inflammation, or, I may say, a vegetable ferment is produced—and the experiments thus far are not disproven. Dr. J. E. Colburn stated if the bean is macerated in tepid water, for fifteen minutes, we will get the full effects of jequirity inflammation, if applied to granular lids. It will be produced in from twelve to fourteen hours, and in some cases in only 6 hours. He cited a case of pannus, where the patient had been almost entirely blind for three years, and by applying the infusion the patient at present was able to read newspaper type. The case was a gentleman, who had pannus this length of time, although it was not very dense. The dry bean, applied to the conjunctiva, does not produce so violent an inflammation. Dr. Hotz, in closing, said he had nothing special to add, beyond that which he reported in the paper. He simply had presented clinical facts on the efficacy of the jequirity bean, which he now showed in the small phial, and of which all could see for themselves its size, form, etc. L. H. M.

SOCIETY TRANSACTIONS.

TRANSACTIONS OF THE TEXAS STATE MEDICAL ASSOCIATION—FIFTEENTH ANNUAL SESSION HELD AT TYLER, TEXAS, APRIL 24, 25, 26 and 27, 1883.

This volume of 315 pages, 12mo, is full of interesting practical material, from a fair proportion of 282 members. The reports on progress in the different departments of medicine are full summaries of the practice of to-day. Dr. Sam. R. Burroughs reports a case of malarial hæmaturia, where the renal capillaries responded promptly to the action of ergot, and where the intestinal mucous membrane took on a vicarious action, resulting in uncontrollable diarrhœa. Dr. Wm. F. Starley reports four cases illustrating the use of chromic acid in uterine hæmorrhage. Dr. J. J. Burroughs reports a case of removal of a living child from the uterus, by Cæsarean section, four minutes after the death of the mother. Dr. J. D. Osborne reports a case of amputation below the knee to remove the effects of an ulcerated leg of forty-five years standing, which resulted in a fracture of diseased bone; and also a case of intussusception of the bowels with stercoraceous vomiting, in a boy five years of age, which was relieved by administering forty grains of tartaric acid dissolved in six ounces of water, and followed by the same quantity of bicarbonate of soda, as enemata. This was given twice, and the resulting formation of gas distended the bowels and caused fœcal evacuations. Dr. T. H. Nott reports a case of tracheotomy for the removal of a grain of corn, which was cut in two by the incision made, and by acting as a valve pushed up with each expiration, and held in position by the swollen folds

of mucous membrane from behind it, necessitated a second incision low down in the trachea before it could be extracted. Dr. Will. B. Davis reports six cases in detail, and refers to some eighteen more, of internal hæmorrhoids relieved by the subcutaneous injection of carbolic acid. He uses the chemically pure acid, and prefers it to the glycerole dilutions, as acting quicker and more effectually, and as passing through the needle more readily. Drs. Beale and Adams report an interesting case of sponge grafting. Dr. Arthur S. Wolf reports two cases of hæmorrhoidal tumors of the urethra treated by the electro-cautery, and discusses the subject at some length. The details of six successful cases of ovariotomy are reported; one by Dr. J. J. Burroughs, one by Dr. S. F. Starley, and four by Dr. T. D. Wooten. Dr. J. B. C. Renfro reports ten cases of uterine polypi. Dr. M. J. Birdsny reports a curious case where absence of the uterus was diagnosticated in a negro woman twenty-two years of age. The vagina was a closed pouch an inch deep, capable of expansion by pressure to two and a half inches. She was very amorous, and, at her urgent request, an attempt was made to give her a vagina of sufficient depth and capacity. The operation resulted in pelvic cellulitis, with a profuse discharge of pus continuing up to the time of making the report, some two months after the operation. Dr. Hilliary Ryan reports a case of vesico-vaginal fistula which was successfully operated on. Drs. Geo. P. Hall and R. H. Chilton give interesting practical reports, respectively, on the conditions of the eye as occasioned by diseases of remote organs, as the uterus, and upon the cataract operation. There are other interesting papers in this volume which we have not referred to for want of space.

TRANSACTIONS OF THE MAINE MEDICAL ASSOCIATION, VOL. VIII, PART I, 1883; 8vo., 190 pp.—The address of Dr. Geo. E. Brickett, as President, shows this Association to have been organized in 1853 by twenty-seven physicians. The list of members show 240 names at present on the active list. Both the President and Dr. M. C. Wedgwood, in the annual address, dwell on the importance of supporting the Code of Ethics of the American Medical Association, and condemn all recognition of "pathies" and "isms" in medicine. Dr. A. K. Meserve discusses Acute Inflammation of the Middle Ear. Dr. E. Eugene Holt discusses Diseases of the Mastoid. Dr. J. G. Pierce considers the subject of Synovitis. Dr. H. N. Small has a paper on Extra-Uterine Pregnancy, and Dr. A. H. Burbank has one on the Induction of Premature Labor. Dr. S. C. Gordon gives the Results of Treatment of Injuries Occurring at Parturition.

Dr. Stanley P. Warren gives the description of a case of Rudimentary Uterus and Vagina, and a case of Cyst of Gartner's Canal. The latter is interesting, from its rarity, and from the recent references which have been made in medical literature to inflammations of this canal. The doctor gives also a short reference to Gartner. Dr. Benjamin F. Sturgis reports a case of Chronic Abscess of the Tibia. Dr. J. A. Spalding gives a very instructive account, with comments, of a malpractice suit in a case of injury to the eye.

Dr. S. C. Gordon, in his report as delegate to the American Medical Association, speaking of the JOURNAL, considered that flattering encouragement was given to it, but hopes that arrangements may be made for more elaborate reports from the Sections where the most interesting discussions are held. An expenditure of a small sum, in his estimation, would furnish stenographers during the session. The biographical sketches which follow, refer to Drs. William Warren Greene, J. P. Grant, Daniel Mountfort Tolford, Roland Curtis, Wm. H. Brown, Daniel F. Ellis, Rotheus E. Paine, Atwood Crosby, and William Sweat, and an extended and very interesting sketch of that eccentric character, Dr. Alexander Ramsay, who died some fifty years ago. Dr. G. P. Bradley, Passed Assistant Surgeon U. S. N., who acts here as his biographer, seems to be provided with unusual facilities for the purpose through his uncle, Dr. Bradley, of Fryeburg, who was a pupil of Ramsay, and possesses the remains of his fine cabinet of preparations and other materials.

BOOK REVIEWS.

ANNUAL REPORT OF THE SUPERVISING SURGEON-GENERAL OF THE MARINE HOSPITAL SERVICE OF THE UNITED STATES, FOR THE FISCAL YEAR 1883. 8vo., 406 pp.

This report is filled with interesting matter. Surgeon-General Hamilton sums up the amount of relief furnished to 40,195 patients, of whom 13,356 were treated in the hospitals, and 26,839 at the dispensaries. The receipts from all sources were $426,620,35, and the expenditures $469,966,21. The necessity for medical relief to the inhabitants of Alaska, and protection from the devastations of syphilis and small-pox is strongly set forth. Reports upon the various hospital buildings and grounds are given at length, with diagrams showing their modes of construction. The question of national quarantines is discussed at some length. The activity and unceasing vigilance of the State Board of Health of Louisiana is referred to in so many words, and "their co-operation made comparatively easy work of what would otherwise have been a task of extreme difficulty." To obtain information from foreign ports, sanitary inspectors have been stationed at Havana and Vera Cruz to give notification of the approach of vessels from those ports at which yellow fever was prevailing; and, in view of the threatened introduction of cholera into the United States by means of shipment of rags, etc., from Egypt, by way of England, sanitary inspectors have been appointed at London and Liverpool, to furnish information of the departure of vessels liable to carry infected passengers or goods. The State Department has actively co-operated in this work, and the consuls have furnished accurate and trustworthy reports from foreign stations. It is recommended that a treaty be negotiated whereby the continuance of commercial relations with Vera Cruz and Havana, as an instance, would

depend upon the cleanliness and sanitary condition of the ports. This is meant to apply particularly to the Governments of Mexico and Spain, as controlling cities bordering on the Gulf, and to the Government of Brazil. The opinion is given that, under existing law, the duty of the Government ends with the maritime quarantine, and the question of local municipal sanitation may, with propriety, be left to the States.

Some eight tables of statistics of the exhibit of operations of the service, of relief districts, a summary of physical examinations of seamen, of diseases and injuries treated, and of causes of mortality, take up some 53 pages. The selected cases from hospital practice include: Manifestations of syphilis among negroes, by Passed Assistant Surgeon, Henry R. Carter, in which the comparative absence of cutaneous eruptions and of mucous patches is marked, and the conclusion reached that syphilis pursues a mild course in the negro race, milder than in the white. Acting Assistant Surgeon A. C. Hamlin reports an interesting case of molluscum, and Acting Assistant Surgeon Geo. H. Stone reports three cases resembling yellow fever occurring at Savannah. Surgeon C. D. Fessenden and Assistant Surgeon C. T. Peckham report cases of popliteal aneurism—the first relieved by compression, the second by ligation of the femoral artery. Surgeon George Purviance reports a case of fracture of the frontal nasal, lachrymal, malar and superior maxillary bones. Surgeon James M. Gassaway reports a case, with illustrations, of fracture of base and vault of skull, resulting in abscess and hæmorrhage and terminating by recovery. Surgeon H. W. Austin gives a case of excision of the shoulder joint for caries, and one of excision of the head and two inches of the shaft of the humerus, followed later by excision of the entire scapula for caries.

He also reports a case of gunshot wound of the eye. Other cases follow, viz.: Osteotomy for vicious union of fractured tibia, by Assistant Surgeon C. T. Peckham; loose cartilage in knee joint, by Assistant Surgeon D. A. Carmichael; contusion of perinæum with laceration of the urethra; Perineal section, by Surgeon Henry W. Sawtelle. abscess of the liver, relieved by aspiration, by Assistant Surgeon John A. Benson, and empyema, relieved by aspiration, by Acting Assistant Surgeon Geo. H. Stone.

The reports of fatal cases with autopsies are very full, and include, among others, reference, in a case of apoplexy, to a pedunculated polycystic body, of an elongated and ovoid shape, about two inches in length, and free from any attachment, except to the choroid plexus in each lateral ventricle, lying loose on the floor, and connected with one end was a long stem (pedicle) which sprang from within a large capillary, given off from the choroid plexus. Microscopic examination determined the cysts to be echinococci. In another case of a man fifty years of age—no diagnosis, suffering from general dropsy effusions into peritoneum and pleura, valvular disease of heart, only one kidney and ureter was found, the right kidney, which was one-half longer than normal. A case of rupture of the heart is recorded where death occurred after symptoms of pneumonia, with acute rheumatism and pericarditis. The heart was in a condition of fatty degeneration, and the rupture, twelve millimeters or more in length, was found in the left ventricle, on its anterior aspect, about twelve millimeters above the apex.

The yellow-fever epidemic of 1882, in the United States and a part of Mexico, is dealt with fully in an appendix made up of the reports of Surgeon Robt. D. Murray, Acting Assistant Surgeons Towsey, Burk, Finney, Fisher and White, and Drs. Lehman and Herron, accompanied by three maps, and giving also a report on the sanitary condition of Vera Cruz, by Assistant Surgeon John Guiteras. The protection afforded by the service, as detailed here, is referred to by O. M. Roberts, Governor of Texas, as a perfect success.

REPORT OF THE COMMISSIONER OF EDUCATION, FOR THE YEAR 1881. 8vo., cclxxvii., 840 pp.

This interesting and valuable report is poorly printed on inferior paper. It is for the most part statistical in its details, but contains a large amount of matter that is of interest to the profession. We note that there are two Schools of Medicine given as for the education of the colored race. One, the Meharry Medical Department of Central Tennessee College, at Nashville, has eight instructors and thirty-five students; the other, the Medical Department of Howard University, at Washington, D. C., has ten instructors and eighty-one students. There are forty-eight scientific (so-called) schools in the United States, employing a corps of instructors amounting to 582 in number. Of the schools of medicine, dentistry and pharmacy, the statistics for 1881 read as follows:

Medical and Surgical.—Number of schools, 76; of instructors, 1,213; of students, 19,250; of graduates at the commencement of 1881, 3,299. Volumes in library 40,757. Value of grounds, buildings and apparatus, $2,208,470. Receipts for the last year from tuition and other fees, $375,493.

Eclectic.—Number of schools, 8; of instructors, 80; of students, 882; of graduates, 288. Library volumes, 2,216. Value of grounds, etc., $230,500. Receipts $39,760.

Homœpathic—Schools, 12; instructors, 173; students, 1,285; graduates, 442; library, 4,195. Value of grounds, etc., $244,000. Receipts, $39,244.

Dental.—Schools, 16; instructors, 215; students, 703; graduates, 285; library, 6,375. Value of grounds, etc., $151,500. Receipts, $84,338.

Pharmaceutical.—Schools, 14; ;instructors, 65; students, 1,416; graduates, 377; library, 7,695. Value of grounds, etc., $79,200. Receipts, $30,830.

The summary of statistics of training schools for nurses gives as the number of schools, 17; instructors, 84; pupils, 414; graduates, in 1881, 133.

With these tables is given a running commentary, which is instructive and suggestive. Under the head of medical schools, preparatory courses, entrance examinations, undergraduate courses, character of medical instruction and the progress in medical education are all discussed. Education in foreign countries and abstracts of the official reports

of the school officers of States, Territories and cities, with statistical tables, for the bulk of the volume. Table xxiv, as an example, gives all the educational and historical publications for 1881, embracing name of book and author, name of publisher, place of publication, size of book, number of pages and price. Table xxv gives improvements in school furniture, apparatus, ventilation, etc., patented in the United States in the year 1881, the whole forming a valuable book of reference for the purposes for which it is intended.

UNITED STATES CONSULAR REPORTS.—REPORTS FROM THE CONSULS OF THE UNITED STATES ON THE COMMERCE, MANUFACTURES, ETC., OF THEIR CONSULAR DISTRICTS. No. 33. September, 1883. 8vo. pp. 415–614.

There is one report in this number which attracts medical attention, but it is rather curiously put. It is headed "Yellow Fever: Scientific Experiments Made at Rio Janeiro, Showing the Transmission of the Disease by Contagion," and is forwarded by Minister Andrews. The report reads "on the 14th we took" etc., but throughout the report there is no key as to who "we" might be. St. Menezes Doria, Dr. Domingos Freire, and Dr. Arango Goes are all mentioned incidentally. In substance, laboratory experiments are given, where some grammes of blood were taken from the heart of a person dying of yellow fever, in which blood the microscope revealed the presence of cryptococci, in different phases of full development. One gramme of this blood was injected into the vein of a rabbit, which died in fifteen minutes with tetanic convulsions. This rabbit's blood, one gramme, was similarly injected hypodermically in a Guinea-pig, which died at the end of some hours. A gramme from the blood of the third subject was injected under the skin of another Guinea-pig. It died within a little time, the blood of all these subjects showing an infinity of cryptococci, and post-mortem examination revealed the anatomico-pathological lesions which usually characterize cases of yellow fever in man. Dr. Domingos Freire is quoted as having discovered and isolated an alkaloid, extracted from black vomit, in which it exists in the state of a salt, considering it a product of a secretion or excretion of the microbii. It is a liquid, of an acid, aromatic smell, oily, forms an opalescent emulsion with water, and is soluble in alcohol and ether; giving out abundant ammoniacal vapors when heated with potash. Dr. Freire also ascertains, by direct experiment, by cultivating cryptococcus in gelatine within a globe, that the color of black vomit is not due to altered blood, but to the cryptococcus, and he was thus enabled to obtain an artificial black vomit. The earth was taken from the grave of a man deceased the year before, which also produced artificial black vomit. A Guinea-pig being shut up in a confined space with some of this earth, died in five days, and its blood, which was previously examined and found to be pure, was crammed with the cryptococcus, in various stages of evolution. The urine was albuminous, and the brain and intestines were yellow with the peculiar pigment of the cryptococcus. Dr. Aranzo Goes is also mentioned as having cultivated a fungus from the blood of the liver of a yellow fever patient upon a slice of bread, with which he succeeded in communicating yellow fever to various fowls, Guinea pigs, and a monkey, by inoculation, injections, and introduction into the stomach.

FOREIGN CORRESPONDENCE.

[For the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.]

LONDON, NOVEMBER, 1883.

By the somewhat sudden death of Sir William Siemens, the scientific world loses one of its brightest luminaries. He was by birth a German, and learned engineering at the factory of Count Stolberg, but in 1843 he came to England. Since then, his fertile brain produced invention after invention, each fresh outcome of his inventive power having some practical bearing on the arts. He received the degree of D.C.L. from Oxford University in 1869; was elected a Fellow of the Royal Society in 1862. His theory of the conservation of solar energy, published last year, won the attention of men of science all over the world.

At the last meeting of the Pathological Society, Mr. Sutton, in conjunction with Dr. H. Gibbes, read a paper on "Tuberculosis in Birds." He said his attention was first attracted to the disease by a farmer in the north of Middlesex, in the spring of 1879, who complained that his stock of poultry was in a fair way of becoming annihilated. Ducks and geese were not affected. After spending more than two years in investigating the matter, and examining from all sources more than 1,000 birds of various species, he discovered invariably, in the diseased organs, a bacillus undistinguishable from that believed by Koch to be distinctive of tuberculosis, and that although in grosser anatomical features, the lesions differ from those of human tuberculosis, yet, histologically, the resemblance is close. Evidence was also obtained of the transmission of the disease to animals fed on the tuberculous tissues of the bird. It is the intention of the Society to initiate a debate upon tubercle, especially with regard to its infective qualities.

A young girl died the other day from eating rather freely some preserved salmon from a tin, a brother who had also partaken of the fish was taken ill after having taken it. The medical evidence showed that death had been caused by the salmon having become poisoned through the tin of the case having dissolved off the iron, and the salmon becoming decomposed by the nitrate of tin that was formed.

An interesting case of successful Cæsarean section in a dwarf has taken place in a provincial town. The patient, a woman aged 48, only four feet in height, ceased growing at the age of eight years. The antero-posterior diameter of the pelvis was only three-fourths of an inch. The operation was performed in a small room of a cottage situated in a narrow court, there being barely standing place for four medical men in the apartment. The weather was so sultry that the window had to be kept open. There were four children down with measles in the

only available room for the use of the family—eight in number—the narrow, unlighted stairs communicating with the dwarf's room above. The operation was performed without antiseptic precautions; no chloroform was used, the neighborhood of the linea-alba being rendered insensitive by means of the ether-spray. The wound was closed by silver sutures, and the patient kept under the influence of opium. For the first few days the symptoms were bad, and although the only nursing received was from a neighbor, who ran in at intervals, within a month the woman was quite well and able to go out. The fœtus weighed seven pounds, and had been dead about seven days. Taking into consideration all the surroundings, the case may be looked upon as unique.

A case is reported of a cowman becoming inoculated in the mouth with virus from a cow suffering from foot and mouth disease. His mouth has been one mass of sores, which apparently attacked the whole of the intestinal mucous tract, and ulcers were appearing on the legs and feet. This is the first well authenticated case occuring in England of the poison being conveyed from the animal to a human being in so marked a form.

The proposal to establish a Marine Zoölogical Station is still being energetically carried on, and it is suggested that some of the surplus funds of the British Fisheries Exhibition should be available for its foundation. Professor Ray Lankester has pointed out that England stands almost alone among the European States in not having a well-equipped marine zoölogical laboratory. It is to be hoped, as more than one good site has been offered, that such an institution may soon become a "*fait accompli*."

A Preparatory School of Medicine has, this autumn, been established at the West London Hospital, at Hammersmith. One of its chief objects is to give intending medical students an early insight into their proposed profession, so they may be able to determine, without needless loss of time or money, if the practice and science of medicine and surgery is compatible with their aspirations. G. O. M.

NECROLOGY.

HAWLEY, GEORGE BENJAMIN, M.D., was born in Bridgeport, Conn., Feb. 13th, 1812; died at Hartford, Conn, April 18th, 1883.

Dr. Hawley's parents removed to Watertown, Conn., while the subject of this sketch was very young, and there he passed his boyhood days, attending the schools in the neighborhood, and acquiring the strength and vigor of body which sustained him in the arduous labors of after life. He afterwards attended a school in Goshen, Conn., where he was prepared for Yale College, which he entered in 1829, graduating in the class of 1833. He immediately commenced the study of medicine with Dr. Pierson, of Windsor, Conn. He attended the lectures at the Medidal Department of Yale College in 1833–34 and 1835.

Receiving his degree, he commenced practice at Charlton, Mass., remaining, however, but a short time, having received and accepted an invitation from Dr. Silas Fuller, the Superintendent of the Retreat for the Insane, at Hartford, Conn., to become his assistant. Four years after he married Dr. Fuller's daughter, Zerviah C., who died in 1847, leaving one son, George F. Hawley, M.D., who is now in practice in Hartford.

In 1848 Dr. Hawley was again married to Miss Sarah C. Boardman, who is still living.

Dr. Hawley was a man of very marked character. His perceptive faculties were exceedingly prominent. His judgments were rapid, but usually correct. He seemed to comprehend a case of disease at a glance almost by intuition. He was the possessor of exhaustless physical power. These faculties enabled him to perform a vast amount of labor in a given time. His perseverance was unlimited, and difficulties and obstacles only stimulated him to greater effort.

Like General Grant, he did not seem to know when he was beaten, and often won a victory out of an apparent defeat. With such a temperament his treatment of disease would naturally be "heroic." He believed in medicine, and in its power to cure, and he attacked disease with all the ardor of his nature.

In 1854, Dr. Hawley became interested in the Hartford Hospital, and it is largely due to him that this charity is to-day established on so firm a foundation. From its beginning till his death this institution occupied a large share of his time and thoughts, and his last work, while confined to his room, was a revision of the rules for its government.

A few years since he conceived the idea of erecting a home for aged and infirm people in indigent circumstances.

He immediately set himself to the task, with all his usual earnestness. He was not spared to see the completion of his work, but he accomplished much, and never lost faith to the last in the success of his undertaking.

A man of Dr. Hawley's character could not but incur the enmity of some, but those who knew him the most thoroughly never questioned his honesty, integrity, and true benevolence.

CHARLES H. PINNEY, M.D., of Conn.

HERSOM, NAHUM ALVAH, M.D., of Portland, Me., was born in Lebanon, in that State, August 7, 1835, and died in Dublin, Ireland, May 1, 1881. His early life was spent in active labor upon his father's farm. Fond of study, the limited duration of the district school was supplemented by attendance upon the schools of adjoining districts In August, 1852, he began attendance at Parsonsfueld Academy, and later at the academy at West Lebanon. Working upon the farm summers, teaching very successfully winters, attending the academy spring and fall, he fitted for college. That he was not able to take a college course was to him a keen regret, which never lessened. He first studied medicine with Dr. John S. Parker, of Lebanon, and later with Dr. David T. Parker, Farmington, N. H. Attended his first course of lectures at Brunswick, Me.; the second at the University of Pennsylvania, at Philadelphia, where he graduated March, 1861. Settling in Sanford, Me.,

he was well established in practice, when he entered the army as Assistant Surgeon 20th Regiment Maine Volunteers, August, 1862. In December, 1862, he was taken prisoner at Fredericksburg, Va., but was soon released. In March, 1863, he was promoted to be full Surgeon 17th Regiment Maine Volunteers, where he remained till April, 1864, when he was given the charge of the field hospital of the Third Division, Second Army Corps. As Dr. Hersom was the youngest surgeon in the division, the appointment was a great surprise to himself. He was selected for the responsible position on account of his recognized ability and character.

How faithfully and well he performed his duties while in the army, the love and esteem in which he was always held by officers and men best testify. His life there, as always, was that of the ideal man—pure, noble, manly, Christian.

In August, 1865, Dr. Hersom settled in Farmington, N. H., and the November following married Jennie Lord, daughter of Samuel Lord, of Spring Vale, Me. At the end of two years, his health being greatly undermined by his army life and an extensive and laborious country practice, he was obliged to give up business, and the next five years were spent in efforts to regain his health. He was not able to resume active practice til the fall of 1872, when he came to Portland. From this time he devoted himself unremittingly to his profession, in which he was very happy and in which he was eminently successful, becoming, notwithstanding his long loss of time and a constitution permanently impaired, a leading practitioner in the State. Feeling much worn by the labors of a very extensive practice, Dr. Hersom left Portland April 11, 1881, for a few months stay abroad, landing at Queenstown, April 22; while on the way to Dublin, May 23, he was attacked by peritonitis, which ended fatally —— 1, 1881. He received the best medical attendance of Dublin, and unremitting care and attention from Dr. E. E. Holt, of this city, who accompanied him, assisted by Dr. D. Webster, of New York, but without avail. He realized his condition, leaving messages for his wife and little girl, and expressed willingness to go. Dr. Hersom's religious faith was deep and earnest, shown more by his life than by professions. He was a member of State Street Church. He prossessed rare qualifications for a physician, keen diagnosis, with an almost intuitive grasp of the right remedy. His was no routine practice; each case was a separate study. He never put his own ease or interest before that of a patient. Very unassuming, sympathetic and sincere, his patients became his firm friends to an unusual degree. His loyalty to friends was a marked trait. He could forgive and forget an injury, but he never forgot a friend or favor. While his many rare qualities only make his loss the greater, his friends have a precious legacy in the memory of his life. Dr. Hersom was a member of the city, county and State Medical Societies, and the American Medical Association, which he joined in 1880. E. E. HOLT, M.D.

MISCELLANEOUS.

LIST OF CHANGES IN THE MEDICAL CORPS OF THE NAVY, DURING THE WEEK ENDING DECEMBER 8, 1883.

Medical Inspector D. Kindleberger, ordered to the U. S. S. Hartford, Pacific Station, per steamer of the 10th inst.

Medical Director A. L. Gihon, detached from duty as member of Board of Inspection and Survey, on the 15th inst., and placed on waiting orders.

Medical Director George Peck, ordered to report on the 15th inst., as member of the Board of Inspection and Survey.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM NOVEMBER 30, 1883, TO DECEMBER 7, 1883.

Carter. W. F., Captain and Assistant Surgeon; relieved from duty at Washington Barracks, D. C, to take effect at the expiration of his present leave of absence, and assigned to duty at Little Rock Barracks, Arkansas. (Par. 4, S. O. 224, Department of the East, Nov. 30, 1883.)

Brown, Paul R., Captain and Assistant Surgeon; assigned to duty in the Department of Arizona. (Par 4, S. O 273, A. G. O., Nov. 28, 1883.)

Richard, Charles, First Lieutenant and Assistant Surgeon; assigned to duty at Jackson Barracks, New Orleans, La. (Par. 2, S. O. 224, Department of the East, Nov. 30, 1883.)

Shufeldt, R. W., Captain and Assistant Surgeon; now on sick leave, relieved from duty at Jackson Barracks, New Orleans, La. (Par. 3, S. O. 224, Department of the East, Nov. 30, 1883.)

NEW BOOKS.

Beal, L. S. One Hundred Urinary Deposits. Second edition. Plates. 5s. Churchill, London.

Bradshaw, B. Dictionary of Mineral Waters, Climatic Health Resorts, Sea Baths, and Hydropathic Establishments. Second edition. 2s. 6d. Trübner, London.

Hill, B. The Essentials of Bandaging, With Directions for Managing Fractures and Dislocations. Fifth edition. 5s. Lewis, London.

Hospital Management. Being the authorized report of a conference on the administration of hospitals, held under the auspices and management of the Social Science Association, on the 3d and 4th of July, 1883. 2s. 6d. Paul, London.

Husband, H. A. Sanitary Law; A Digest of the Sanitary Acts of England and Scotland. 3s. 6d. Simpkin, London.

Mushet, W. Boyd. Cholera: Its Ætiology, Contagiousness, and Treatment. 2s Churchill, London.

Ralfe, C. H. Clinical Chemistry; An Account of the Analysis of Blood, Urine, Morbid Products, etc. Sixteen engravings. 5s. Cassell, London.

Semple, C. E. A. Children's Diseases: Their History and Treatment 7s. 6d. Baillière, London.

Slagg, C. Sanitary Work in the Smaller Towns and in Villages. Second edition. 3s. Lockwood, London.

Treves, F. Surgical Applied Anatomy. Sixty-one engravings. 7s. 6d. Cassell, London.

Wise, A. T. Tucker. Wiesen as an Alpine Resort in Early Phthisis. With instructions on clothing, diet, and exercise in the Swiss Alps during winter. 3s. 6d. Baillière, London.

Woodhead, G. S. Practical Pathology. One hundred and thirty-six colored plates. 24s. Simpkin, London.

Brown, D. B. Surgical Experiences in the Zulu and Transvaal Wars, 1879 and 1881. 8vo. 6s. Simpkin, London.

Carter. A. H. Elements of Practical Medicine. Second edition. 9s. Lewis, London.

James, Prosser. Vichy and its Therapeutical Resources. Fifth edition. 2s. 6d. Baillière, London.

Kirk, J. Papers on Health. 8 vols., 12mo. 2s. each. Hamilton, London.

Milton, J. S. The Hygiene of the Skin. Second edition. 1s. Chatto. London.

Snow, H. S. Clinical Notes on Cancer; Its Ætiology and Treatment, With Special Reference to the Heredity Fallacy and to the Neurotic Origin of Most Cases of Alveola Carcinoma. 3s. 6d. Churchill, London.

Strange, W. The Seven Sources of Health. A Manual of Personal Hygiene. 2s. 6d. Renshaw, London.

Watts, H. A Manual of Chemistry. Vol. I. Physical and Inorganic Chemistry. 9s. Churchill, London.

Buckham, T. R. Insanity Considered in Its Medico-Legal Relations $2.00. Lippincott & Co.